Offshore Index Assessment Program

2010 Summary Report

Upper Great Lakes Management Unit
Lake Huron
Report: PS-LHA-IA10-SUM

Ontario
Ministry of
Natural Resources
Ministère des
Richesses naturelles

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Table of Contents

Introduction

The Lake Huron office of the Upper Great Lakes Management Unit conducts annual index gill net surveys throughout the Canadian waters of Lake Huron. These waters include the main basin, Georgian Bay, and the North Channel. These surveys are collectively known as the offshore index assessment program. Its purpose is to monitor the populations of commercially exploited fish species and to collect information about the offshore fish community. The primary objective of the offshore index program is to characterize the strength of the year classes of commercially exploited fish species before they are susceptible to commercial fishing gear. The offshore index program is also an important tool for measuring the progress of lake trout (*Salvelinus namaycush*) rehabilitation in the lake.

The offshore index program consists of overnight sets of standardized, monofilament gill nets set on the lake's bottom at various locations throughout Lake Huron (Figure 1). The offshore index program has remained essentially unchanged since its inception with only minor modifications to the sampling protocol due to logistical and financial constraints. As a result, the offshore index program provides an invaluable, long-term, trend-through-time record of the offshore fish community in Lake Huron.

This report summarizes the individual offshore index projects conducted during 2010. Each project consisted of several net sets at a specific location during a specific time period. Any changes to the sampling process that deviated from the long-term protocol are described. Catch per unit of effort (CPUE), length-at-age, and pre-recruit indices are calculated for select species. Differences between the results of this and past field seasons are briefly discussed.

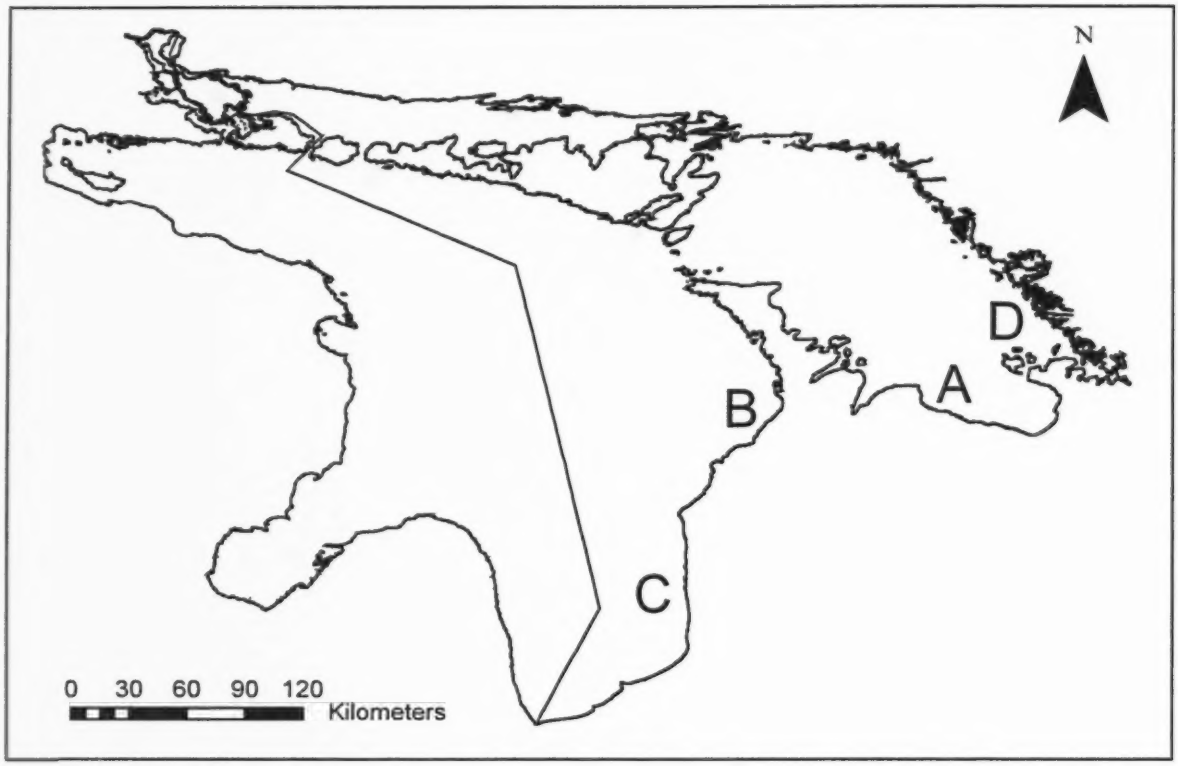

Figure 1. General locations of the offshore index assessment projects conducted in Lake Huron during 2010. The projects were conducted near Cape Rich (A), Southampton (B), Grand Bend (C), and the Watcher Islands (D).

Materials and Methods

Depending on project, the survey design of the offshore index program includes both a fixed and random component. Projects with a long-term time series are essentially fixed-site surveys where the index nets are set in roughly the same place every year to monitor the offshore fish community through time. Projects with a fixed-site survey design are the Cape Rich, Southampton, Grand Bend, and Clapperton Island projects. The Clapperton Island project was not run this year due to logistical constraints related to preparing a new research vessel for use in this program. Projects without existing fixed stations employed a depth-stratified, randomized survey design. In these projects, net set locations were randomly selected within several depth strata from a 500 m grid overlay. The depths used to define these strata depends on the available habitat, project objective, and proximity to other offshore index projects. The actual depth strata that were used in each project are described in the Results section. The only project that used a randomized survey design this year was the Watcher Islands project.

The offshore index program uses only multi-mesh monofilament gillnets. The meshes are described by their stretch measure. Usually three of these nets are set each day. All of the nets consisted of a 15 m panel of 32 mm (1.25") mesh, a 25 m panel of 38 mm (1.5") mesh, and 50 m panels of 51 mm (2.0"), 64 mm (2.5"), 76 mm (3.0"), 89 mm (3.5"), 102 mm (4.0"), 114 mm (4.5"), and 127 mm (5.0") mesh ordered from smallest mesh to largest mesh. This gear is identified as GL32. A 50 m panel of 140 mm (5.5") mesh and a 50 m panel of 153 mm (6.0") mesh were added to the third net. The order of the meshes in this net, identified as GL21, was randomized between projects and seasons. The collection of the individual panels that make up each net are referred to here as a net "gang". The nets were set perpendicular to the depth contours to maximize the catch and to reduce the variability between catches. The offshore index program was conducted exclusively from the Ontario Ministry of Natural Resources' research vessel, the *Atigamayg*.

Detailed information was collected about each net set. Latitude, longitude, Secchi depth, weather conditions, and surface water temperature were recorded. The water depth at each mesh was also noted. Temperature loggers were attached to each end of the net to log changes in water temperature while the nets were in the water. Set duration lasted between 20 and 24 hours unless unsafe conditions were created by inclement weather. Instances where weather prevented net retrieval for an extended period of time were accounted for in calculations of relative abundance by using effective net nights to compensate for gear saturation. If a net fished for more than one night, the number of nights fished was adjusted by a factor of 0.7. Thus a net that fished for two

consecutive nights was considered to have fished for 1.4 effective net nights for the purposes of CPUE calculations (0.7 x 2 = 1.4).

Biological information was collected from the catch. As each net was lifted the catch was segregated by mesh size into containers to facilitate the collection of biological information by mesh size. Fork length, total length, aging structures (if required), and round weight were measured for up to 20 individuals of each species from each mesh size. In instances where more than 20 individuals of a single species were captured in one mesh size, a sub-sample of 20 was randomly selected for these biological measurements. Fork length and aging structures (if required) were collected from the next 30 individuals. All remaining individuals were counted. Sea lamprey (*Petromyzon marinus*) marks were recorded using Great Lakes Fishery Commission standards (Ebener et al. 2006) from all of the fish that were sampled. Salmonids and lake whitefish (*Coregonus clupeaformis*) were examined for clipped fins. Depending on the objectives of the individual project, any combination of aging structures (scales, otoliths, or fin rays), stomachs, or tissue samples may have been collected as well.

The structure used to age each fish varied by species. Age was determined from scale samples for most species. Cisco (*Coregonus artedi*) were aged using otoliths. Lake trout were assigned an age based on their clipped fins or a coded wire tag number. Lake trout without a coded wire tag or an unambiguous, year-specific fin clip were assigned an age using otoliths.

If sufficient biological information was collected, more information about a species' population was calculated. If enough age and length data were available from a particular species and project, a Von Bertalanffy growth curve was estimated. If enough maturity data was also collected, age-at-maturity was estimated using logistic regression. Growth and maturity curves were generated separately for males and females.

Average CPUE is listed for each species in each summary table. In most instances, CPUE was the average number of fish of a given species caught in those nets where at least one individual of that species was caught. This is appropriate for non-target species because a number of nets were set that would not be expected to catch those species. For example, nets targeting bloater (*Coregonus hoyi*) would not be expected to catch species found in shallower water, such as smallmouth bass (*Micropterus dolomieu*). Consequently the bloater-targeting nets should not be included in the calculation of average CPUE for smallmouth bass. However, for target species the average CPUE includes the catch from only net sets targeting that species, even if that species was not caught. The offshore index program targets lake trout, lake whitefish, "deepwater" chub (cisco other than *Coregonus artedi*), and yellow perch (*Perca flavescens*).

Pre-recruit indices (Hughes 1989) were calculated for some commercially exploited species caught during the program. The pre-recruit index uses age-specific CPUE data to infer the relative abundance of cohorts before they are susceptible to commercial fishing gear (referred to here as "pre-recruits"). The age-specific CPUE values are standardized to a value of ten to allow comparisons between year classes. Values greater than ten indicate that a year class is stronger than average (greater than average abundance) while a value less than ten indicates that a year class is weaker than average (Mohr et al. 1997). The index values listed in this report are an average of up to four age-specific, standardized CPUE values from each year class, depending on species and project.

Results

Projects were conducted in both traditional and new locations. Georgian Bay (near Cape Rich), the central main basin (near Southampton), and the southern main basin (near Grand Bend) were the traditional locations that were sampled this year. Two projects were conducted in each of the southern and central portions of the main basin near Grand Bend and Southampton, respectively. The first one took place in the spring (June) and the other in the fall (September). For the second year in a row, a project was run in the waters surrounding the Watcher Islands in Georgian Bay to monitor the progress of lake trout rehabilitation in the area. The location of all projects are shown in Figure 1.

The 117 nets (49.530 km of gear) set this year captured a total of 26 fish species and 4 265 individuals. Of these, 2 372 were biologically sampled. The most common species were yellow perch (61 % of catch), lake whitefish (8 %), and white sucker (*Catostomus commersoni*, 6 %). Of the 191 lake trout that were sampled, 55 (28.8 %) were unclipped and presumed to be naturally produced. This percentage is higher than last year and among the highest ever observed in the offshore index program. The increase is likely due to wide-spread natural reproduction that has been observed in many areas of Lake Huron, especially the main basin.

Georgian Bay (Cape Rich) **[LHA_IA10_002]**

This project was conducted in Georgian Bay near Cape Rich between August 23 and September 02 (Table 1). The depth of the nets ranged between 20.3 m and 53.5 m. Three of the 18 nets fished for more than one night due to inclement weather creating unsafe work conditions. Lake trout were targeted. The position of each net is shown in Figure 2.

Fifteen fish species were caught during this project (Table 2). Two fewer species were caught last year even though the number of nets set was identical. Cisco and brown trout (*Salmo trutta*) were caught this year but not last year. The most common species caught during this year's program were lake trout (20.1 % of catch), round whitefish (*Prosopium cylindraceum*, 19.5 %), and lake whitefish (14.8 %). Plots of the biological attributes of the lake trout (Figure 3), lake whitefish (Figure 4), and round whitefish (Figure 5) captured during this project were constructed.

Average CPUE for this project was 16.6 fish/night. Round whitefish had the highest average CPUE (10.3), followed by white sucker (8.2), and longnose sucker (*Catostomus catostomus*, 7.7). Lake whitefish were caught in every mesh size except the 32 mm mesh.

Table 1. Set information for the fishing gear deployed in Georgian Bay near Cape Rich during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
201	23-Aug-10	44° 40.11'	-80° 36.26'	GL32	23.40	40.9
202	23-Aug-10	44° 39.34'	-80° 36.83'	GL32	22.80	34.5
203	23-Aug-10	44° 38.75'	-80° 36.68'	GL21	22.11	39.2
204	24-Aug-10	44° 42.38'	-80° 37.14'	GL32	22.66	21.8
205	24-Aug-10	44° 41.97'	-80° 37.44'	GL32	22.55	20.3
206	24-Aug-10	44° 41.64'	-80° 37.40'	GL21	22.76	21.6
207	25-Aug-10	44° 39.15'	-80° 32.92'	GL32	45.88	49.3
208	25-Aug-10	44° 38.75'	-80° 33.57'	GL32	46.40	46.8
209	25-Aug-10	44° 38.40'	-80° 34.21'	GL21	46.93	47.6
210	30-Aug-10	44° 42.77'	-80° 36.65'	GL32	24.65	31.8
211	30-Aug-10	44° 42.38'	-80° 36.38'	GL32	24.11	35.9
212	30-Aug-10	44° 41.89'	-80° 36.00'	GL21	23.48	38.6
213	31-Aug-10	44° 36.61'	-80° 31.44'	GL32	20.36	24.0
214	31-Aug-10	44° 36.55'	-80° 32.53'	GL32	21.06	23.2
215	31-Aug-10	44° 41.81'	-80° 34.54'	GL21	23.16	40.0
216	01-Sep-10	44° 40.79'	-80° 33.48'	GL32	20.08	53.5
217	01-Sep-10	44° 40.78'	-80° 34.07'	GL32	20.00	48.5
218	01-Sep-10	44° 40.67'	-80° 34.75'	GL21	19.91	51.5

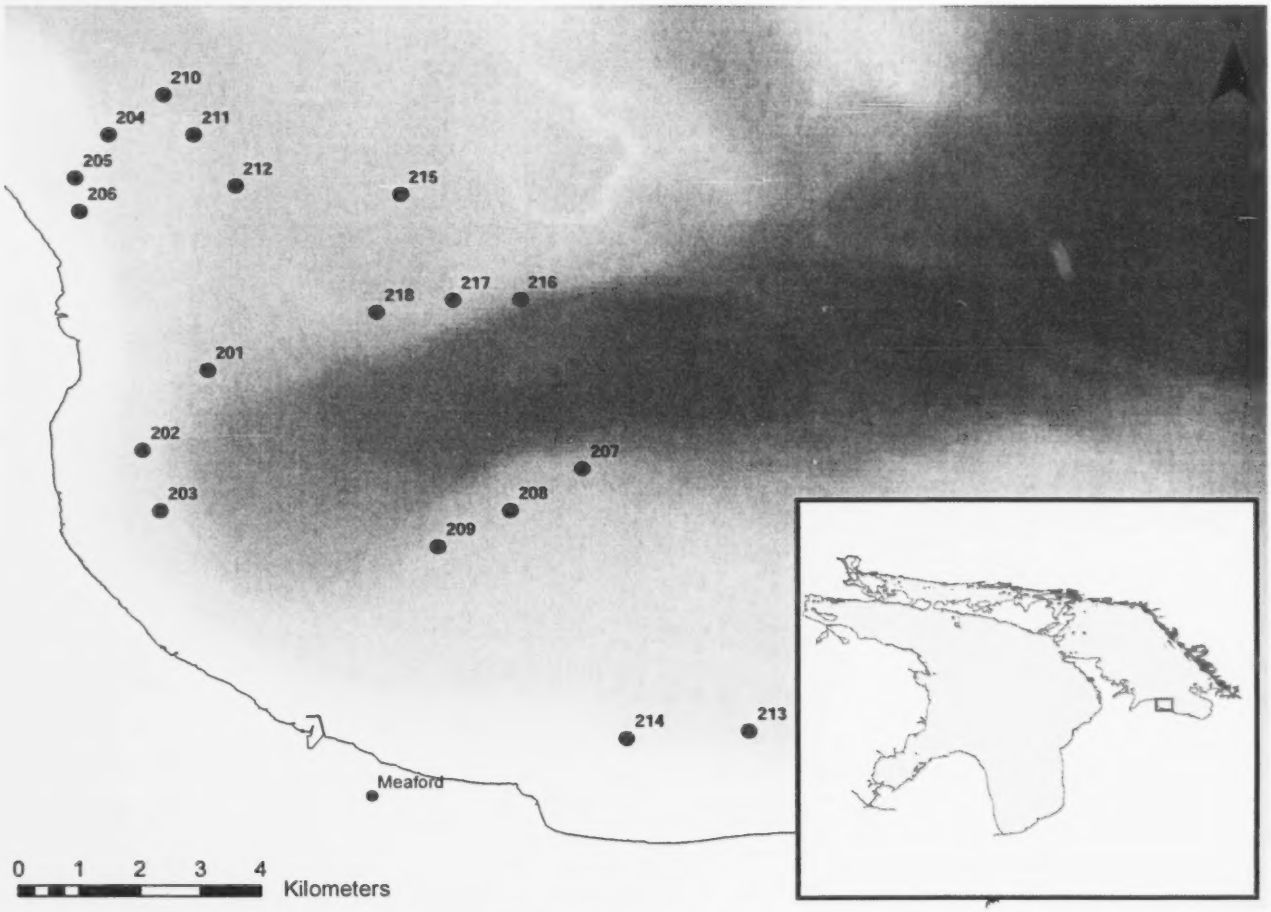

Figure 2. Offshore index sampling locations in Georgian Bay near Cape Rich during 2010 (project code LHA_IA10_002). Lake trout were targeted.

Table 2. Count of the number of fish by species caught in each mesh size of the gill nets set in Georgian Bay near Cape Rich during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	**032**	**038**	**051**	**064**	**076**	**089**	**102**	**114**	**127**	**140**	**153**	**Total**	**CPUE**
Brown Trout			1			2						3	3.00
Burbot	1		5	4	4	3	1					18	2.00
Chinook Salmon			1	1	1				1			4	1.33
Chub	6	1										7	0.90
Cisco				1	1							2	1.00
Lake Chub	5											5	2.50
Lake Trout			1	9	4	10	17	7	9	7		64	3.33
Lake Whitefish		1	9	6	3	12	7	4	3	1	1	47	3.51
Longnose Sucker	2	1	4	6	9	9	11	3	1			46	7.67
Rainbow Smelt		1	1			1						3	1.50
Rainbow Trout		4	3	3	2	1						13	4.33
Round Goby	1	1										2	1.00
Round Whitefish		5	22	25	3	5	1			1		62	10.33
White Sucker			3	1	3	4	6	15	7	2		41	8.20
Yellow Perch		1										1	1.00
Total	15	15	50	56	30	47	43	29	21	11	1	318	

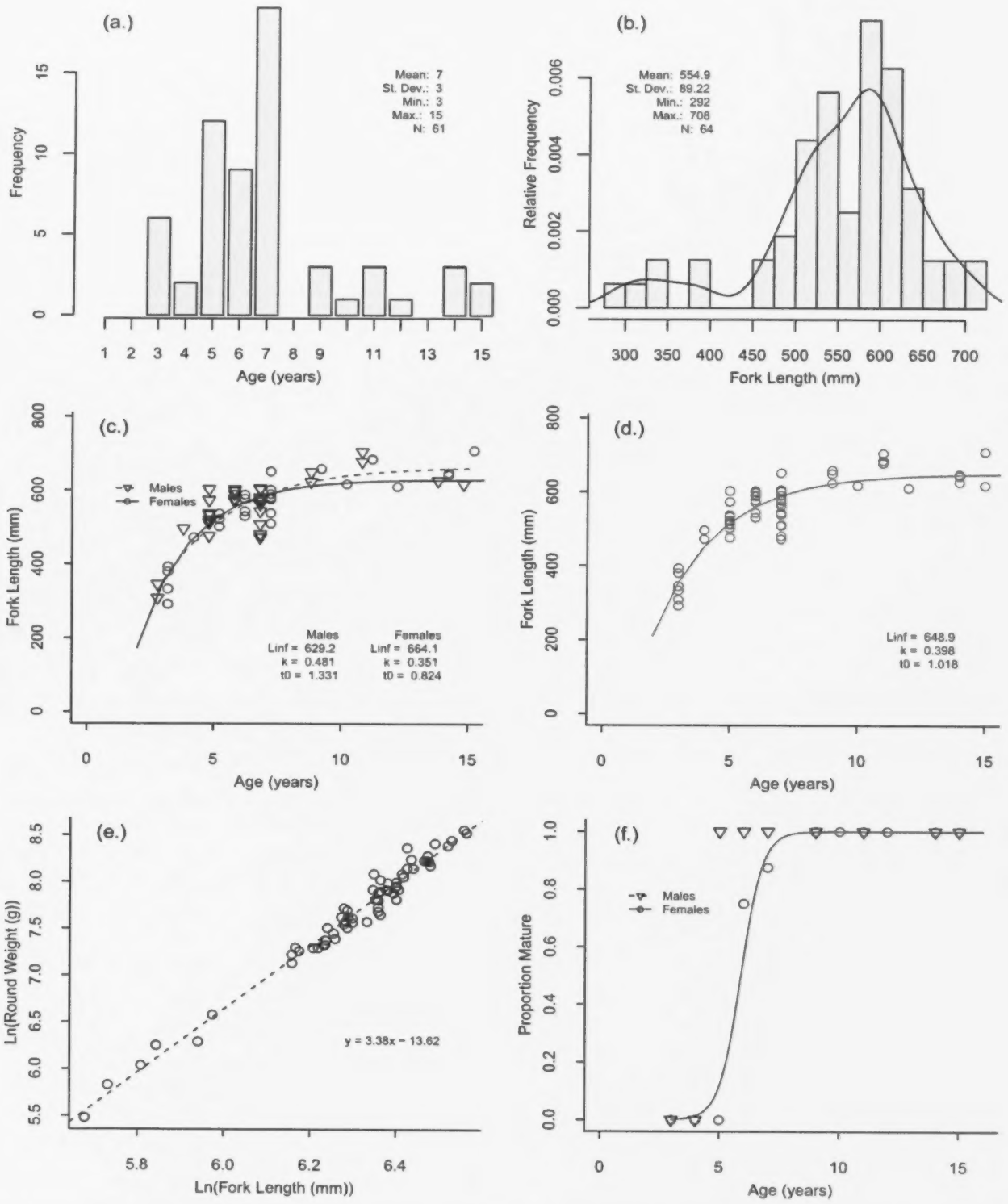

Figure 3. Lake trout age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Cape Rich project (LHA_IA10_002).

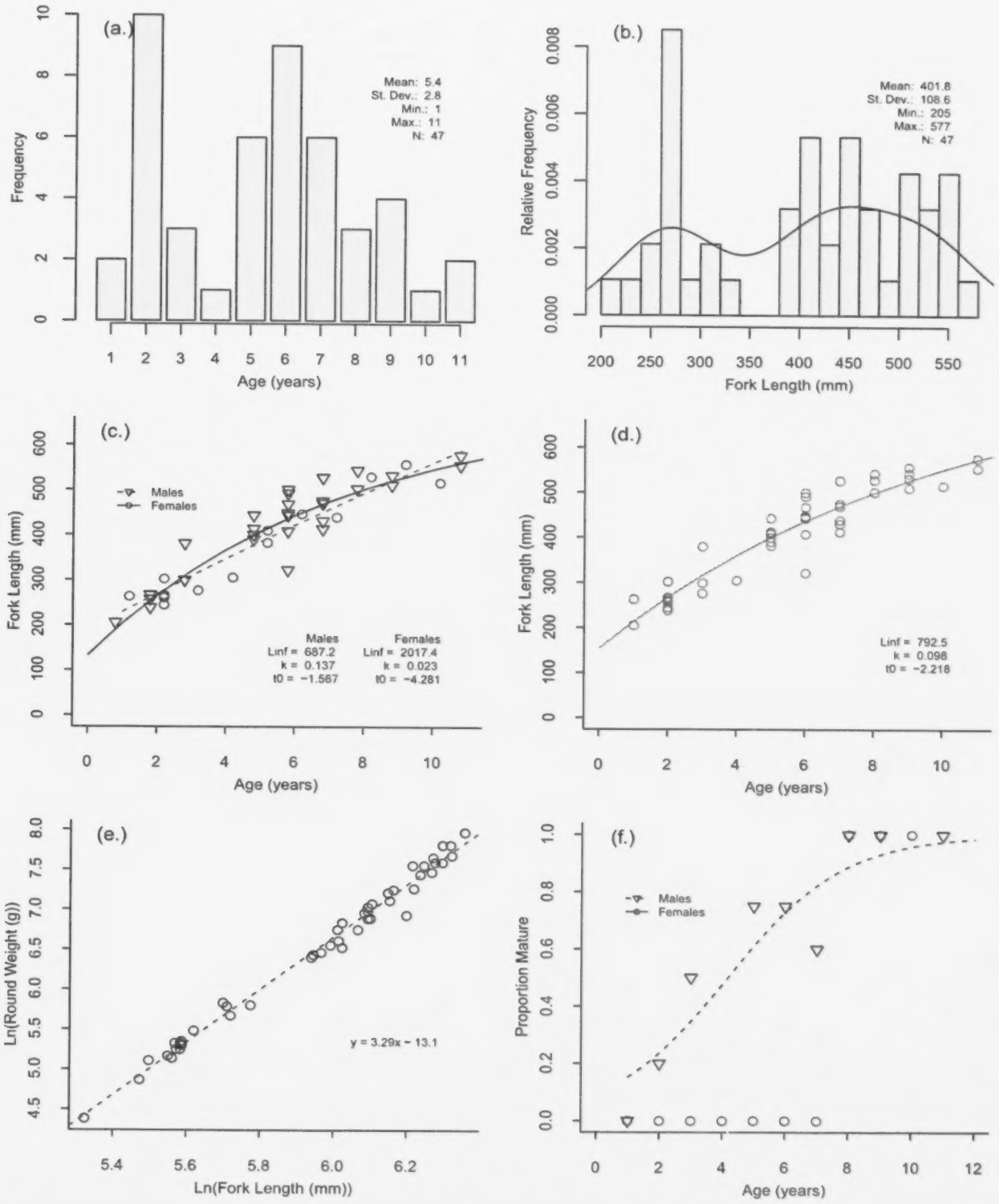

Figure 4. Lake whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Cape Rich project (LHA_IA10_002).

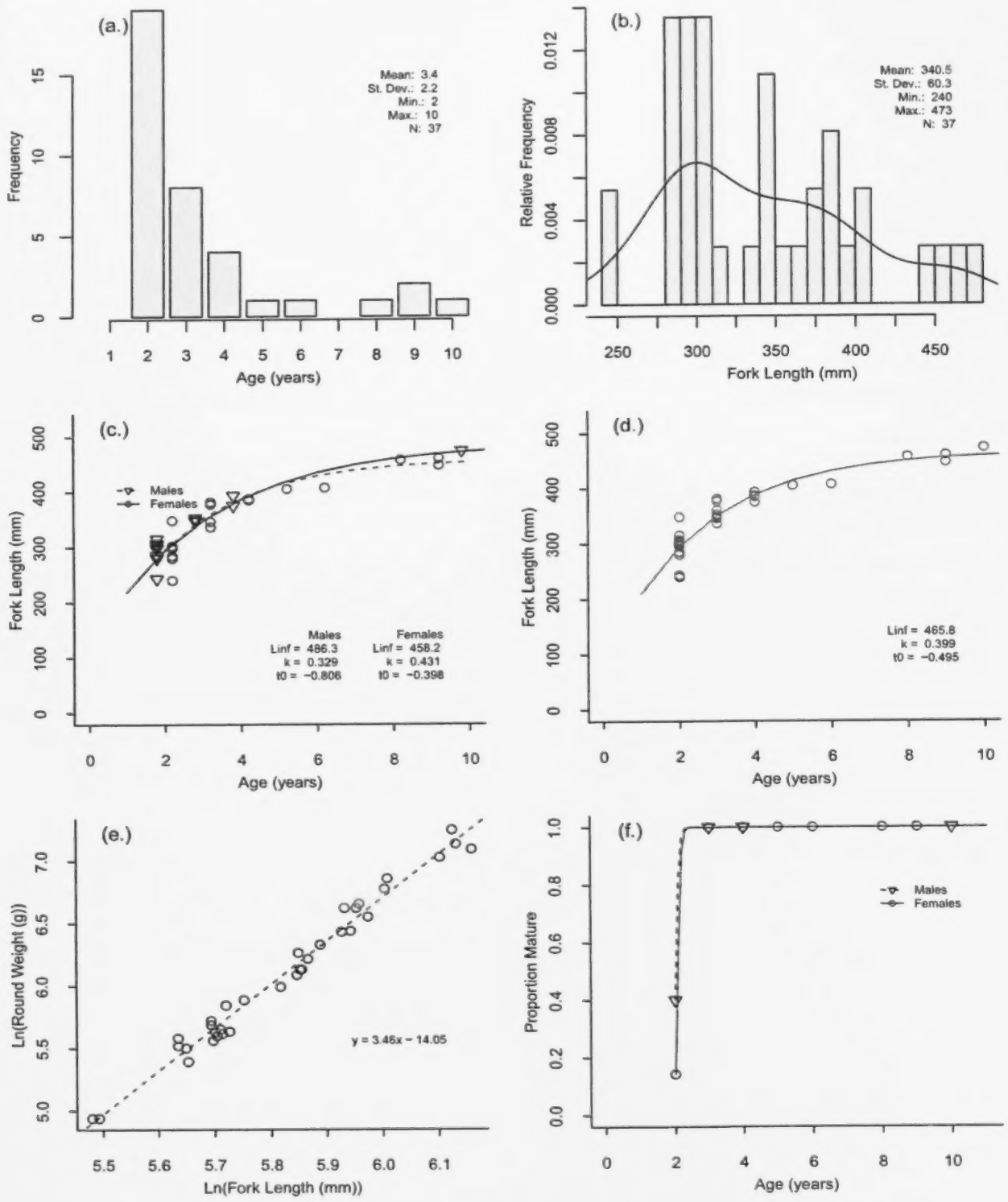

Figure 5. Round whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Cape Rich project (LHA_IA10_002).

Georgian Bay (Watcher Islands) **[LHA_IA10_027]**

This project was run in Georgian Bay near the Watcher Islands between August 10 and August 20 (Table 3). This project was run to evaluate the progress towards lake trout rehabilitation in the area. The depth of the nets ranged between 15.8 m and 73.8 m and encompassed three depth strata: <25 m, 25-50 m, and >50 m. All 21 net sets were approximately 24 hours in duration. Lake trout were targeted. The position of each net is shown in Figure 6.

Seventeen fish species were caught during this project (Table 4). One fewer species was caught this year, although nine more nets were set last year. Lake sturgeon (*Acipenser fulvescens*) were caught last year but not this year. The most common species were yellow perch (34.6 % of the catch), lake trout (15.6 %), and chub (12.2 %). Plots of the biological attributes of the lake trout (Figure 7), round whitefish (Figure 8), chub (Figure 9), and yellow perch (Figure 10) captured during this project were constructed.

Average CPUE for this project was 15.6 fish/night. Yellow perch had the highest mean CPUE (28.3), followed by round whitefish (11.3), and chub (8.0). All of the chub were caught in the 32 mm and 38 mm mesh size.

Table 3. Set information for the fishing gear deployed in Georgian Bay near the Watcher Islands during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
2701	10-Aug-10	44° 54.02'	-80° 08.13'	GL32	17.35	47.2
2702	10-Aug-10	44° 56.98'	-80° 09.70'	GL32	18.43	64.0
2703	10-Aug-10	44° 58.17'	-80° 12.65'	GL21	19.35	59.0
2704	11-Aug-10	44° 55.46'	-80° 04.79'	GL32	21.11	41.7
2705	11-Aug-10	44° 59.04'	-80° 06.37'	GL32	22.45	40.6
2706	11-Aug-10	44° 59.86'	-80° 08.35'	GL21	23.20	45.2
2707	12-Aug-10	44° 50.28'	-80° 08.95'	GL32	20.18	18.2
2708	12-Aug-10	44° 50.86'	-80° 09.06'	GL32	21.40	15.8
2709	12-Aug-10	44° 53.24'	-80° 09.59'	GL21	21.83	44.3
2710	16-Aug-10	44° 50.81'	-80° 05.71'	GL32	20.06	35.6
2711	16-Aug-10	44° 52.64'	-80° 06.32'	GL32	21.03	44.5
2712	16-Aug-10	44° 55.04'	-80° 08.20'	GL21	22.01	73.8
2713	17-Aug-10	44° 56.70'	-80° 02.89'	GL32	21.35	32.2
2714	17-Aug-10	44° 58.31'	-80° 02.84'	GL32	22.11	16.0
2715	17-Aug-10	44° 59.36'	-80° 03.72'	GL21	22.78	19.4
2716	18-Aug-10	44° 55.14'	-80° 06.59'	GL32	20.71	48.4
2717	18-Aug-10	44° 56.72'	-80° 07.68'	GL32	21.66	49.3
2718	18-Aug-10	44° 59.71'	-80° 09.83'	GL21	22.93	60.2
2719	19-Aug-10	44° 51.91'	-80° 03.85'	GL32	20.90	57.0
2720	19-Aug-10	44° 53.00'	-80° 02.11'	GL32	21.75	46.2
2721	19-Aug-10	44° 54.66'	-80° 00.94'	GL21	23.05	20.3

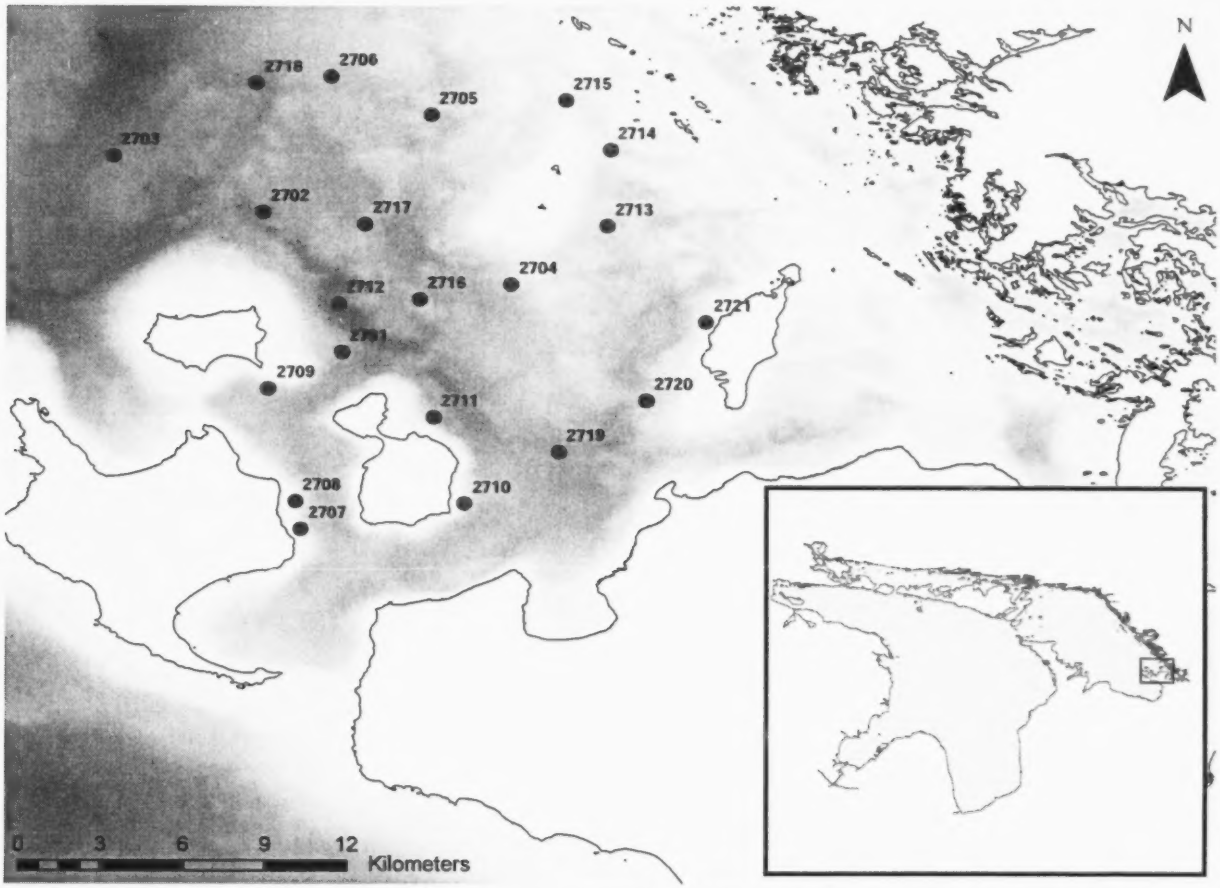

Figure 6. Offshore index sampling locations in Georgian Bay near the Watcher Islands during 2010 (project code LHA_IA10_027). Lake trout were targeted.

Table 4. Count of the number of fish by species caught in each mesh size of the gill nets set in Georgian Bay near the Watcher Islands during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	032	038	051	064	076	089	102	114	127	140	153	Total	CPUE
Alewife		1										1	1.00
Burbot	1	1	2	3	4		4	1	1			17	1.89
Chinook Salmon	1	1	1	1								4	2.00
Chub	30	10										40	8.00
Cisco				1								1	1.00
Lake Chub	1											1	1.00
Lake Trout			4	5	10	10	11	8	3			51	2.43
Lake Whitefish	1	2	1	2	1	2	2	2	5			18	2.25
Longnose Sucker	3	3				1	1					8	2.67
Rainbow Smelt	1		5		1		1		1			9	2.25
Rock Bass		1	11	1	2							15	5.00
Round Goby	2											2	1.00
Round Whitefish	10	8	10	6								34	11.33
Smallmouth Bass			4									4	4.00
Walleye					1	1						2	1.00
White Sucker		2	1		2	1	1					7	3.50
Yellow Perch	58	32	16	7								113	28.25
Total	108	61	55	26	21	15	20	11	10	0	0	327	

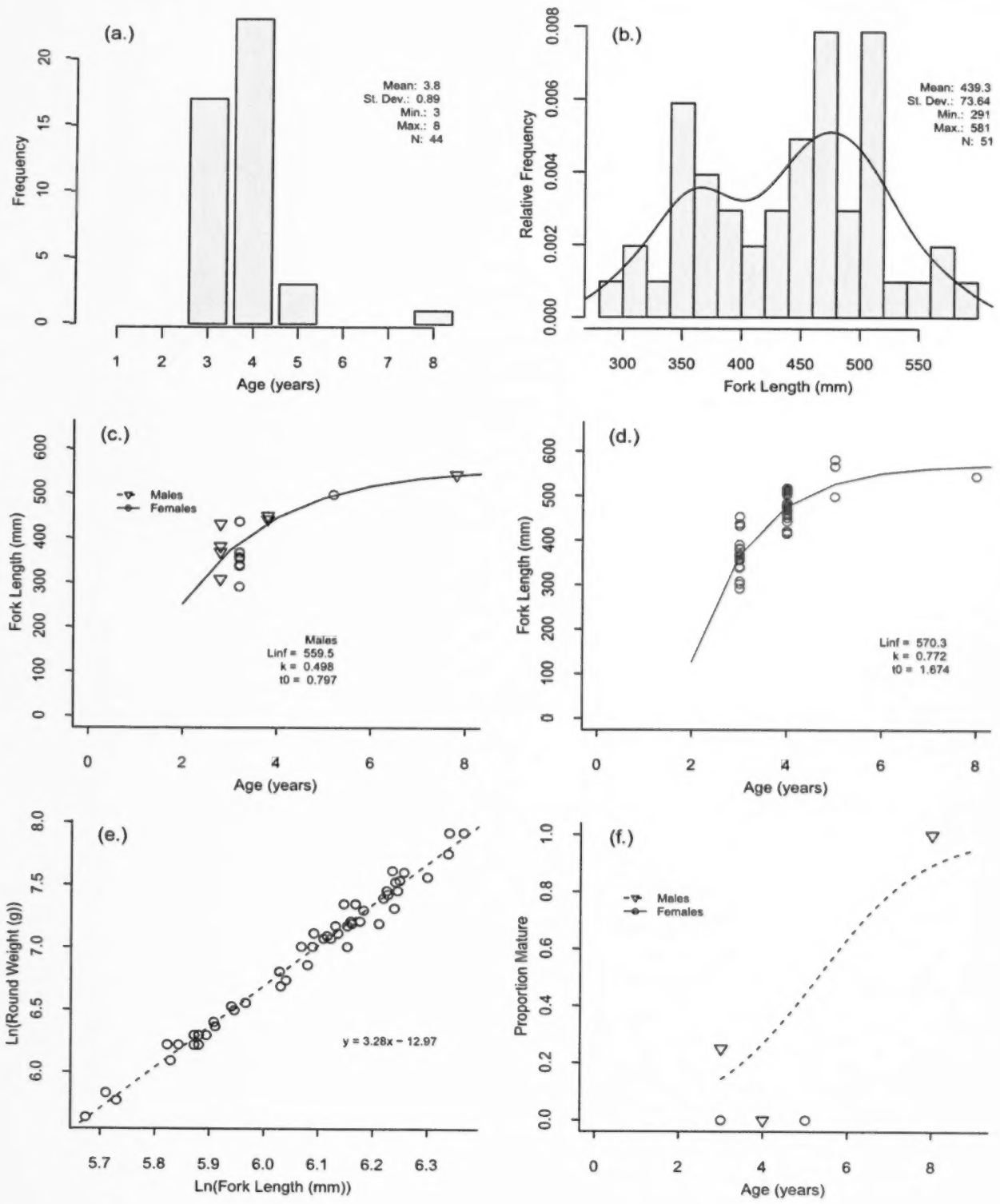

Figure 7. Lake trout age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Watcher Islands project (LHA_IA10_027).

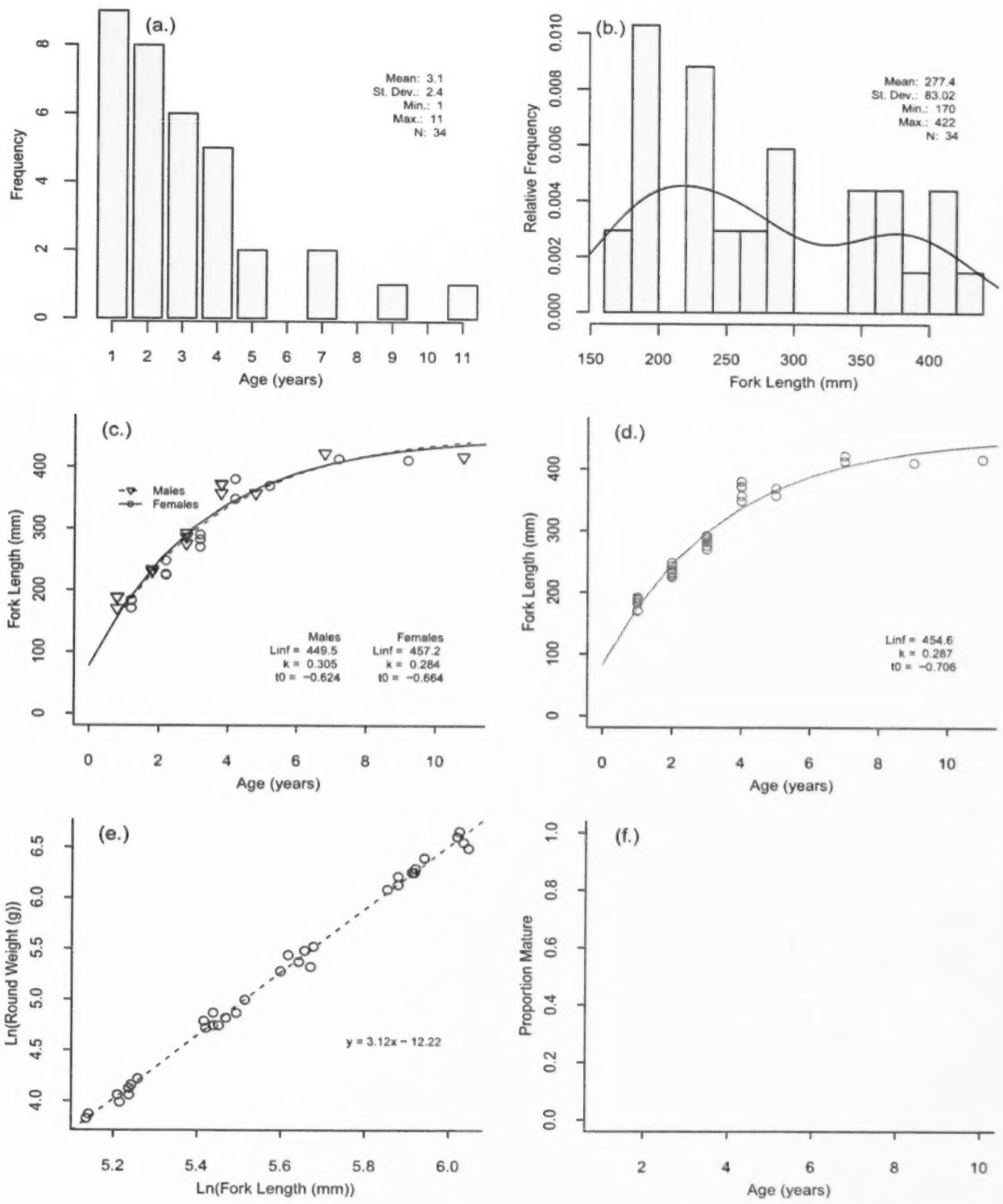

Figure 8. Round whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Watcher Islands project (LHA_IA10_027).

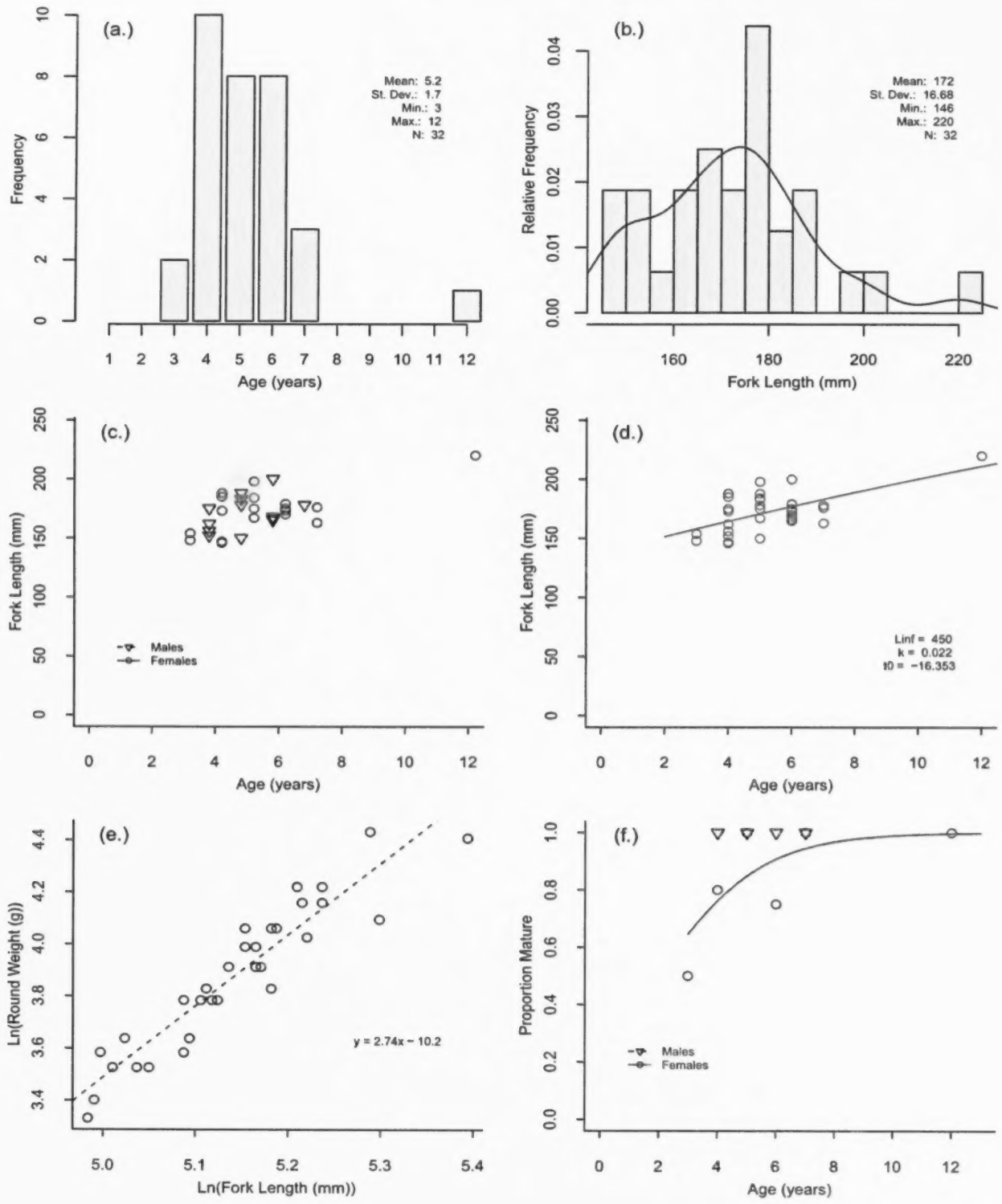

Figure 9. Chub age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Watcher Islands project (LHA_IA10_027).

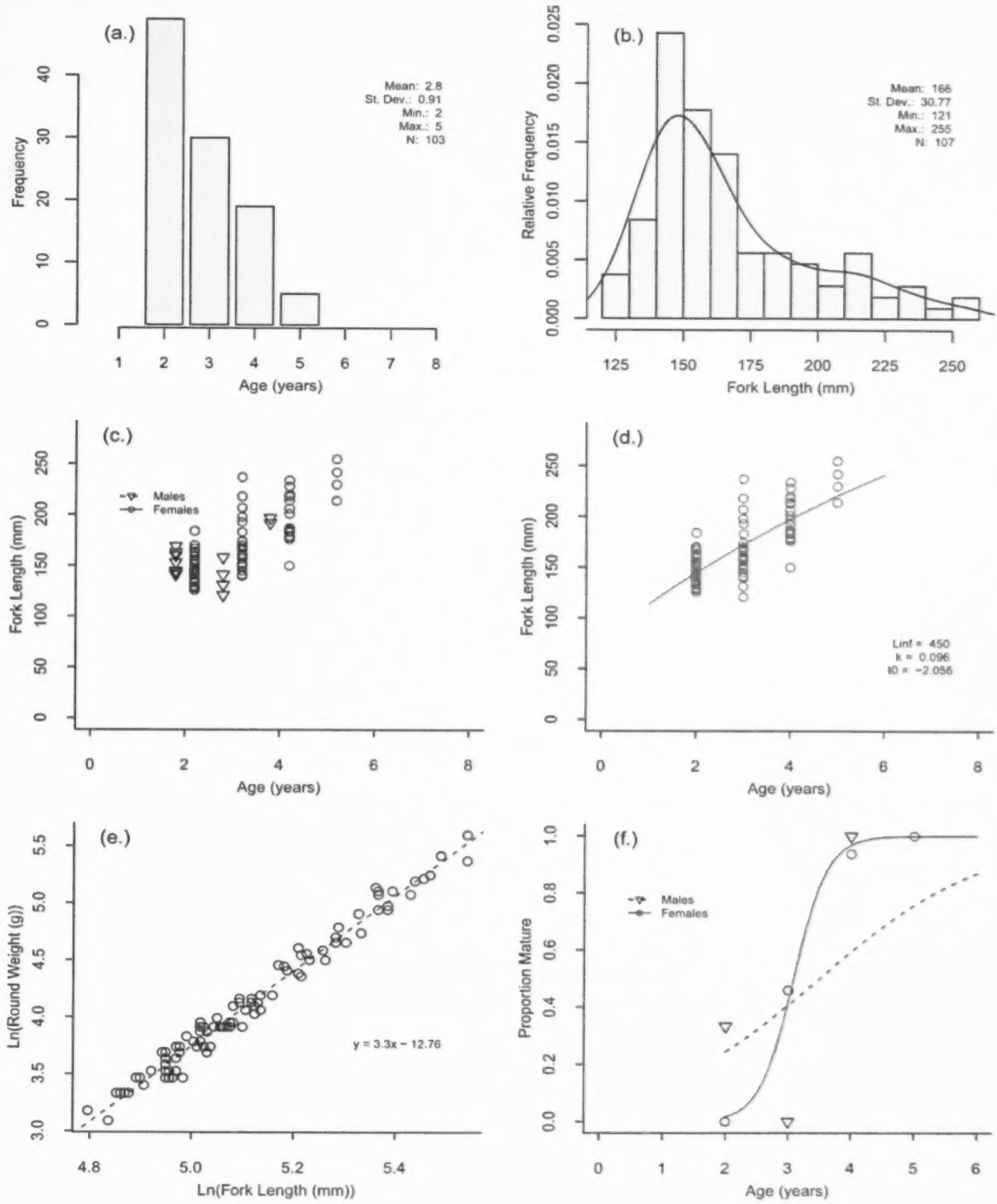

Figure 10. Yellow perch age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Watcher Islands project (LHA_IA10_027).

Central Lake Huron (Southampton) - Spring **[LHA_IA10_005]**

This project was conducted in the central main basin near Southampton between May 31 and June 18 (Table 5). The depth of the nets ranged between 13.8 m and 57.9 m. All 30 net sets were approximately 24 hours in duration. Chub, lake whitefish, and yellow perch were sought. The position of each net is shown in Figure 11.

Thirteen fish species were caught during this project (Table 6). The most common species were lake trout (31.8 % of catch), lake whitefish (25.5 %), and yellow perch (14.5 %). Plots of the biological attributes of the lake trout (Figure 12) and lake whitefish (Figure 13) captured during this project were constructed.

Average CPUE for this project was 3.7 fish/night. Lake trout had the highest mean CPUE (2.1), followed by burbot (*Lota lota*, 1.5), and rainbow smelt (*Osmerus mordax*, 1.5). Lake trout were caught in every mesh size except the smallest two (32 mm and 38 mm).

Table 5. Set information for the fishing gear deployed in the spring in the central main basin near Southampton during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
501	31-May-10	44° 35.56'	-81° 22.32'	GL32	22.98	27.9
502	31-May-10	44° 36.05'	-81° 21.89'	GL32	23.53	28.7
503	31-May-10	44° 35.98'	-81° 20.80'	GL21	22.88	23.6
504	01-Jun-10	44° 40.75'	-81° 28.53'	GL32	22.26	56.2
505	01-Jun-10	44° 41.26'	-81° 28.95'	GL32	22.96	57.9
506	01-Jun-10	44° 41.32'	-81° 27.43'	GL21	22.25	48.9
507	02-Jun-10	44° 40.31'	-81° 25.15'	GL32	22.70	38.0
508	02-Jun-10	44° 39.65'	-81° 24.83'	GL32	21.28	38.5
509	02-Jun-10	44° 39.90'	-81° 23.71'	GL21	21.46	33.9
510	03-Jun-10	44° 42.11'	-81° 19.38'	GL32	22.85	13.9
511	03-Jun-10	44° 41.40'	-81° 19.11'	GL32	22.21	13.8
512	03-Jun-10	44° 40.74'	-81° 20.09'	GL21	21.58	21.4
513	07-Jun-10	44° 42.60'	-81° 21.46'	GL32	24.76	25.3
514	07-Jun-10	44° 42.06'	-81° 21.64'	GL32	24.18	25.1
515	07-Jun-10	44° 42.07'	-81° 20.96'	GL21	23.60	21.7
516	08-Jun-10	44° 38.82'	-81° 18.70'	GL32	22.33	16.0
517	08-Jun-10	44° 38.23'	-81° 18.92'	GL32	21.78	16.1
518	08-Jun-10	44° 37.48'	-81° 95.11'	GL21	21.10	17.9
519	09-Jun-10	44° 37.17'	-81° 25.68'	GL32	22.01	43.7
520	09-Jun-10	44° 36.54'	-81° 26.02'	GL32	22.25	43.8
521	09-Jun-10	44° 36.53'	-81° 26.87'	GL21	22.46	46.8
522	10-Jun-10	44° 34.57'	-81° 29.32'	GL32	23.18	48.0
523	10-Jun-10	44° 33.98'	-81° 29.38'	GL32	22.58	48.3
524	10-Jun-10	44° 33.66'	-81° 28.50'	GL21	21.98	41.5
525	16-Jun-10	44° 29.80'	-81° 25.72'	GL32	24.01	18.7
526	16-Jun-10	44° 30.34'	-81° 24.86'	GL32	24.20	19.2
527	16-Jun-10	44° 30.91'	-81° 24.50'	GL21	24.31	17.9
528	17-Jun-10	44° 30.89'	-81° 28.33'	GL32	19.96	33.6
529	17-Jun-10	44° 31.28'	-81° 27.45'	GL32	19.95	33.6
530	17-Jun-10	44° 31.92'	-81° 27.04'	GL21	19.85	33.5

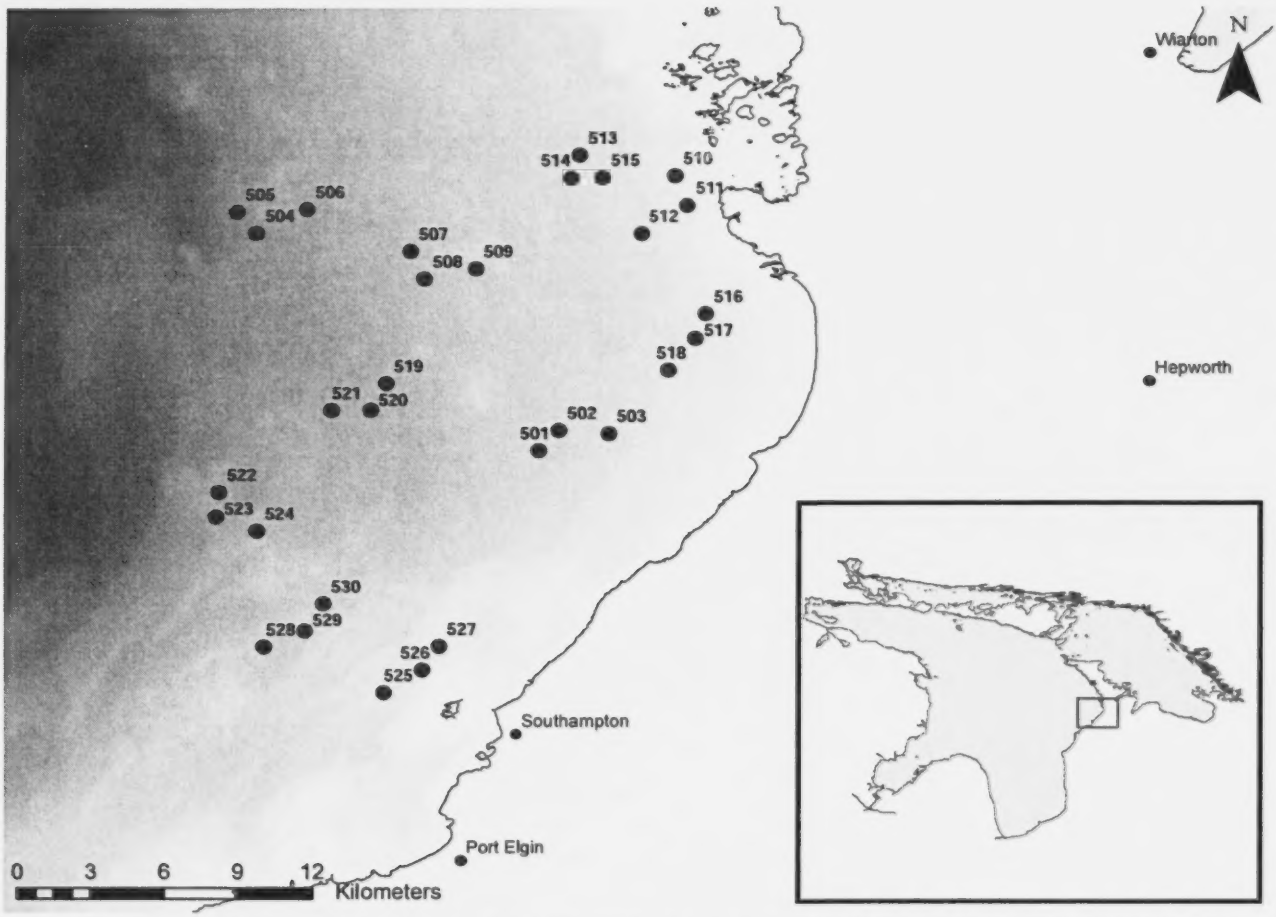

Figure 11. Offshore index sampling locations in the central main basin near Southampton during 2010 (project code LHA_IA10_005) during the spring (June). Chub, lake whitefish, and yellow perch were targeted.

Table 6. Count of the number of fish by species caught in each mesh size of the gill nets set in the central main basin near Southampton in the spring during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	**032**	**038**	**051**	**064**	**076**	**089**	**102**	**114**	**127**	**140**	**153**	**Total**	**CPUE**
Burbot				1	1	3	4					9	1.50
Chinook Salmon			1		1							2	1.00
Cisco				1	3	1						5	1.25
Lake Chub	2											2	1.00
Lake Trout			2	1	8	5	5	8	3	1	2	35	2.06
Lake Whitefish			2		1	2	12	8	2	1		28	1.33
Longnose Sucker				2	1	1	1					5	1.00
Rainbow Smelt	2		1									3	1.50
Round Goby	2											2	1.00
Round Whitefish		1										1	1.00
Stonecat			1									1	1.00
White Sucker				1								1	1.00
Yellow Perch	2	6	4	4								16	1.33
Total	8	7	11	10	15	12	22	16	5	2	2	110	

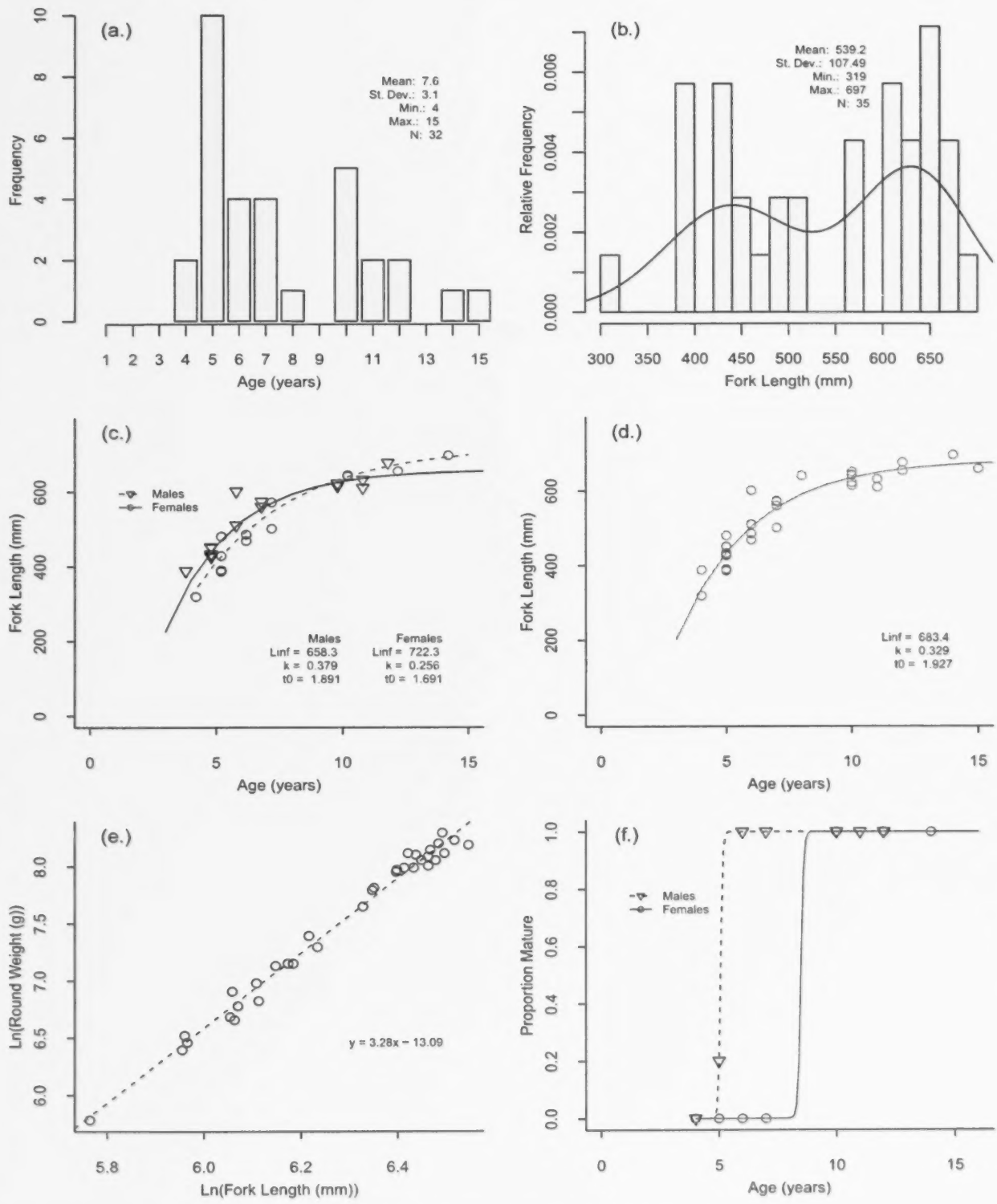

Figure 12. Lake trout age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Southampton project (LHA_IA10_005), June 2010.

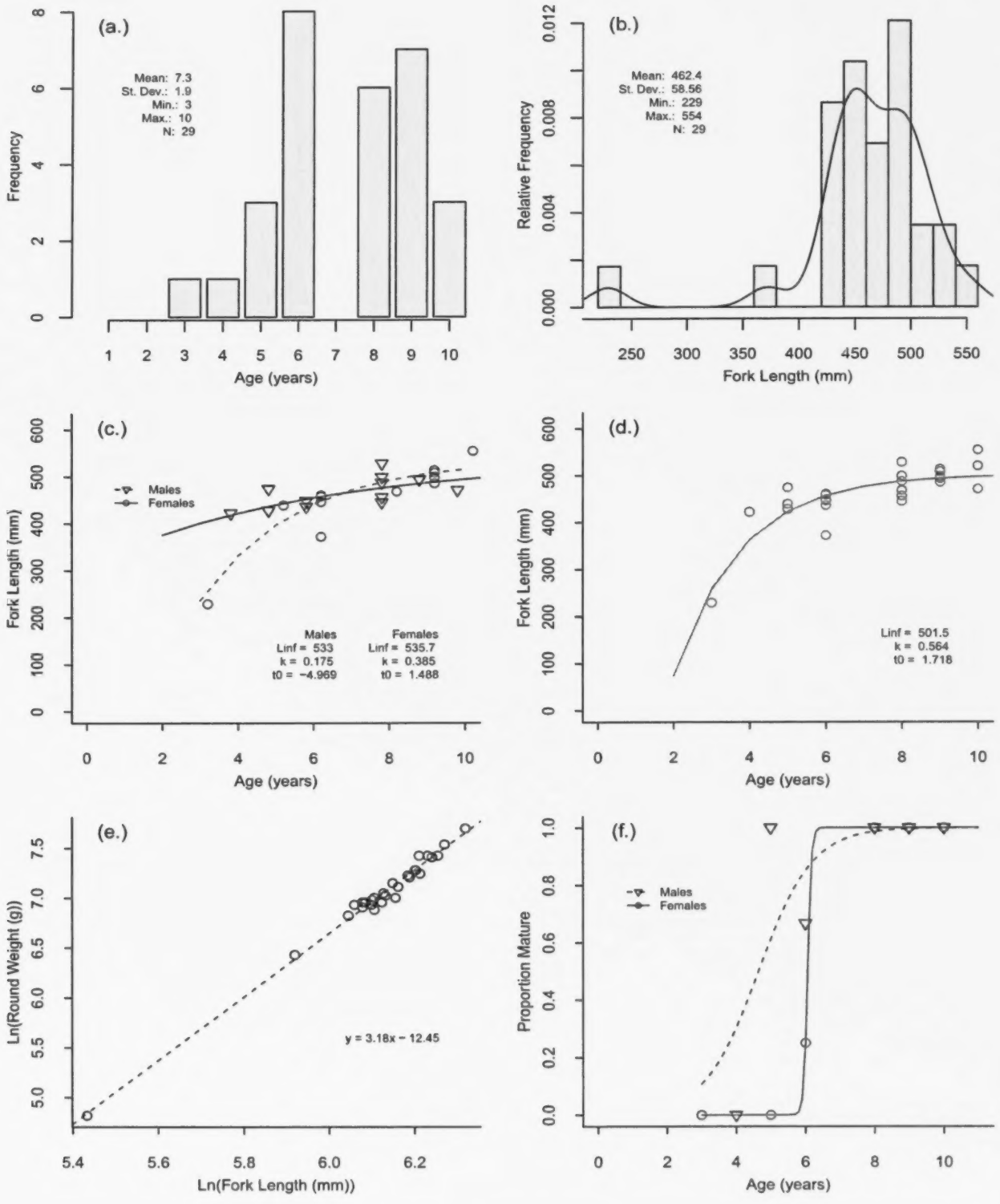

Figure 13. Lake whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Southampton project (LHA_IA10_005), June 2010.

Central Lake Huron (Southampton) - Fall **[LHA_IA10_005]**

This project was conducted in the central main basin near Southampton between September 13 and September 23 (Table 7). The depth of the nets ranged between 24.2 m and 44.0 m. Six of the 12 nets fished for more than one night due to inclement weather creating unsafe work conditions. Lake whitefish and yellow perch were targeted. The position of each net is shown in Figure 14.

Sixteen fish species were caught during this project (Table 8). Three more species were caught this year, even though 15 more nets were set last year. Lake chub (*Couesius plumbeus*), white bass (*Morone chrysops*), and walleye (*Sander vitreus*) were caught this year but not last year. The most common species were yellow perch (44.6 % of the catch), longnose sucker (23.1 %), and lake whitefish (10.6 %). Plots of the biological attributes of the lake whitefish (Figure 15), chub (Figure 16), and yellow perch (Figure 17) captured during this project were constructed.

Average CPUE for this project was 29.4 fish/night. Yellow perch had the highest mean CPUE (40.7), followed by longnose sucker (7.6), and chub (4.5). The catch of yellow perch was approximately evenly dispersed among the 32 mm, 38 mm, and 51 mm mesh sizes.

Table 7. Set information for the fishing gear deployed in the fall in the central main basin near Southampton during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
551	13-Sep-10	44° 35.52'	-81° 26.19'	GL32	48.03	42.8
552	13-Sep-10	44° 36.37'	-81° 25.94'	GL32	48.26	44.0
553	13-Sep-10	44° 36.36'	-81° 24.63'	GL21	48.51	39.2
554	16-Sep-10	44° 36.26'	-81° 21.89'	GL32	24.33	28.6
555	16-Sep-10	44° 35.68'	-81° 22.35'	GL32	24.11	27.9
556	16-Sep-10	44° 35.65'	-81° 23.34'	GL21	23.95	31.7
557	20-Sep-10	44° 38.65'	-81° 25.23'	GL32	47.58	38.5
558	20-Sep-10	44° 39.27'	-81° 24.95'	GL32	47.76	38.4
559	20-Sep-10	44° 39.29'	-81° 23.96'	GL21	47.93	34.3
560	22-Sep-10	44° 42.12'	-81° 21.75'	GL32	23.13	24.9
561	22-Sep-10	44° 41.44'	-81° 21.17'	GL32	23.03	24.8
562	22-Sep-10	44° 40.54'	-81° 20.87'	GL21	22.86	24.2

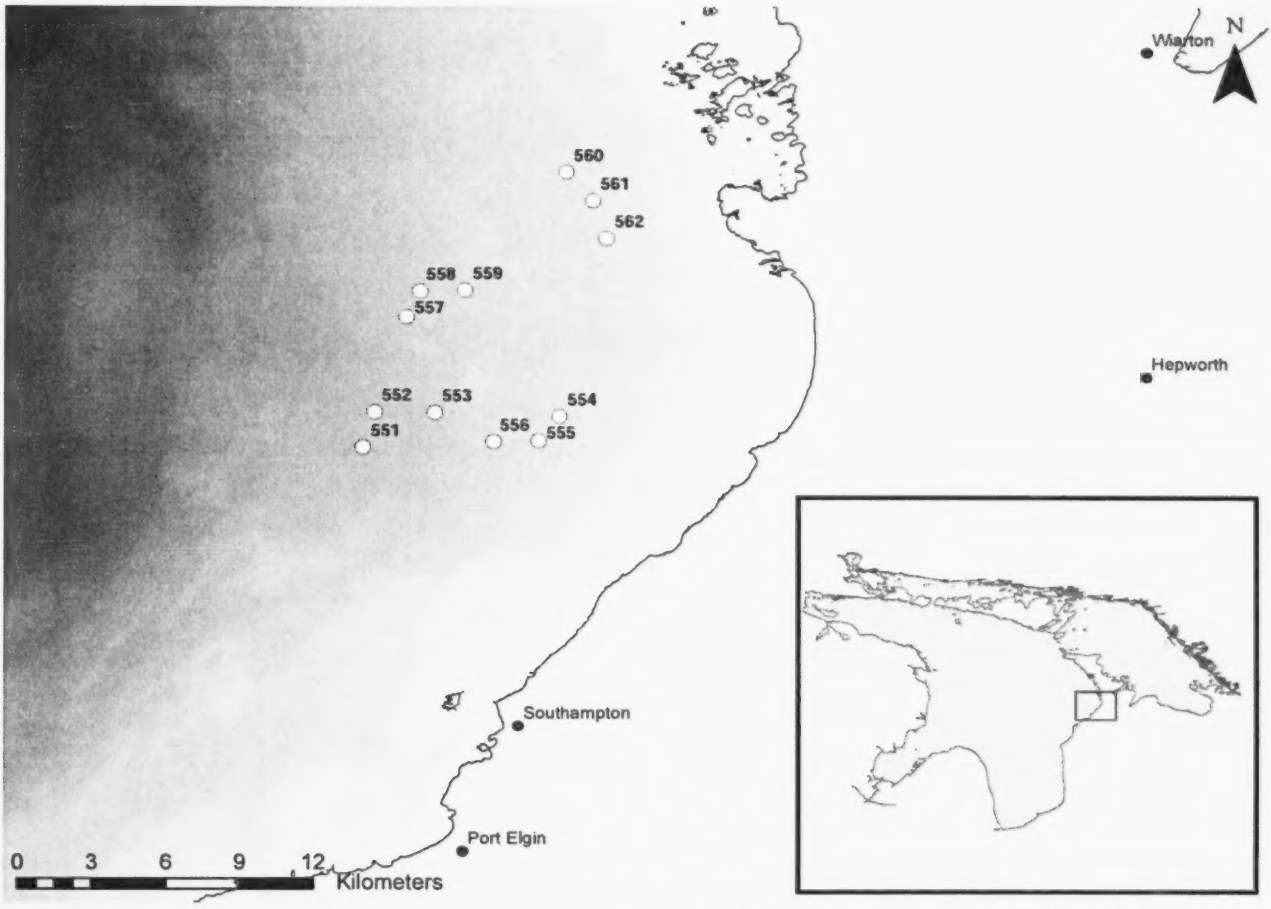

Figure 14. Offshore index sampling locations in the central main basin near Southampton during 2010 (project code LHA_IA10_005) during the fall (September). Lake whitefish and yellow perch were targeted.

Table 8. Count of the number of fish by species caught in each mesh size of the gill nets set in the central main basin near Southampton in the fall during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	**032**	**038**	**051**	**064**	**076**	**089**	**102**	**114**	**127**	**140**	**153**	**Total**	**CPUE**
Burbot				1	2	7	1	1				12	1.33
Chinook Salmon				2				1				3	1.07
Chub	21	15	2									38	4.52
Cisco			1		1							2	0.83
Lake Chub	5	1										6	3.00
Lake Trout			1	2	1	1	2		1			8	1.43
Lake Whitefish		1		2	2	4	16	4	14	2		45	3.95
Longnose Sucker	2	8	2	4	4	28	24	21	3		2	98	7.90
Rainbow Smelt	1		2	2					1			6	1.03
Round Goby	6											6	1.25
Round Whitefish				2	2							4	1.43
Smallmouth Bass				1								1	1.00
Walleye								2		1		3	0.88
White Bass				1								1	1.00
White Sucker	1		1									2	1.00
Yellow Perch	53	58	49	28	1							189	40.67
Total	89	83	58	45	13	40	43	29	19	3	2	424	

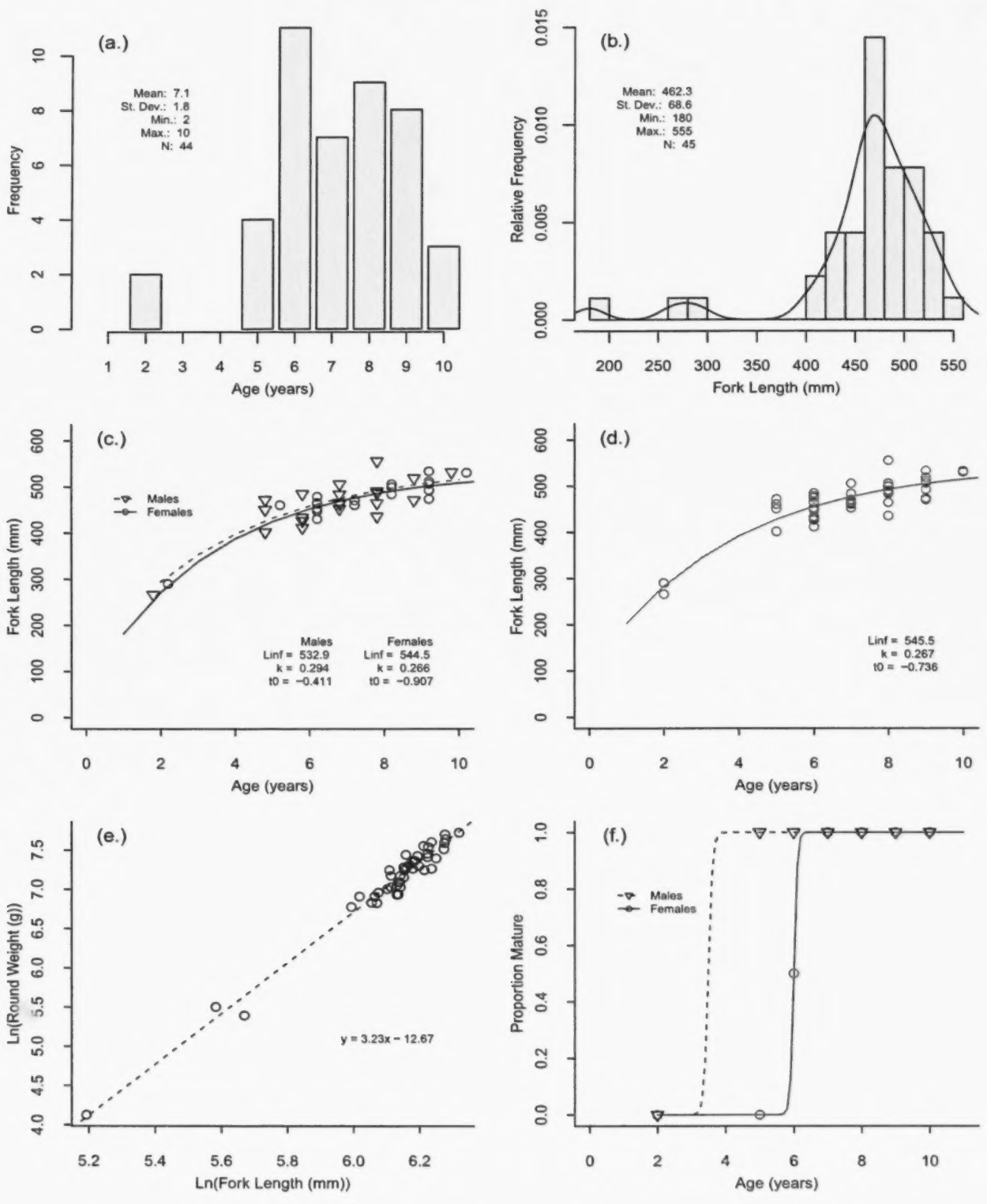

Figure 15. Lake whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Southampton project (LHA_IA10_005), September 2010.

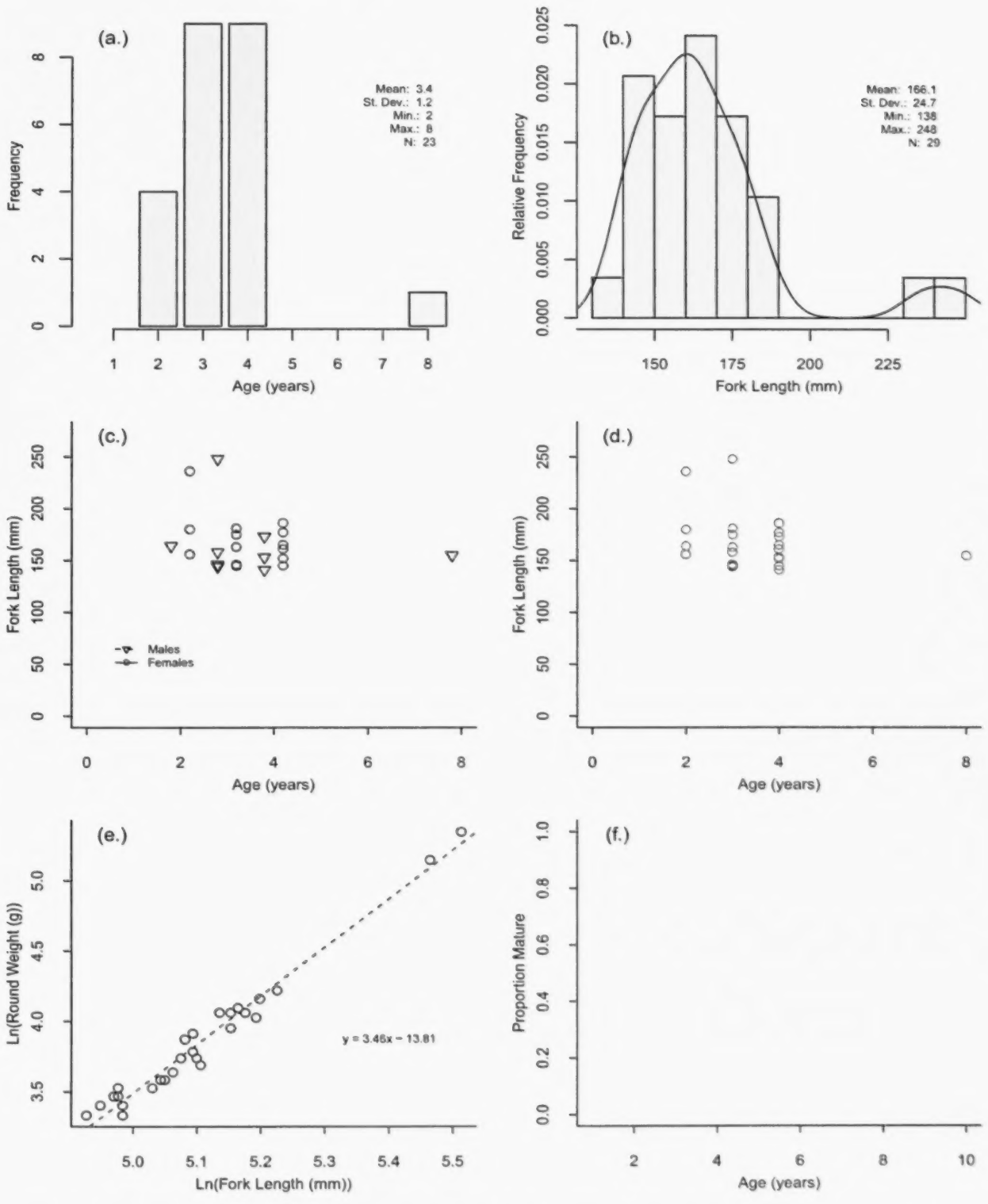

Figure 16. Chub age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Southampton project (LHA_IA10_005), September 2010.

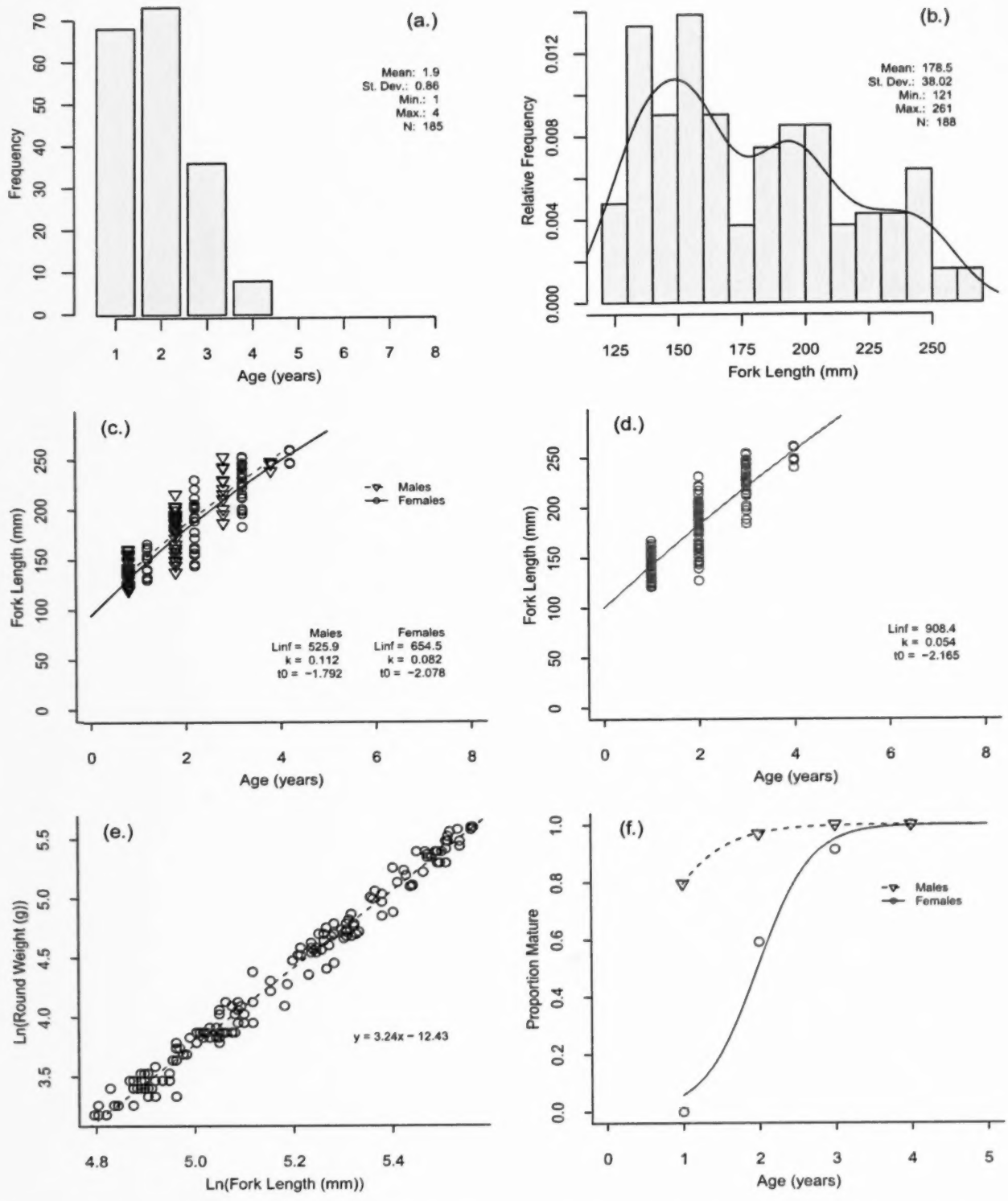

Figure 17. Yellow perch age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Southampton project (LHA_IA10_005), September 2010.

Southern Lake Huron (Grand Bend) - Spring [LHA_IA10_006]

This project was conducted in the southern main basin near Grand Bend between June 18 and July 07 (Table 9). The depth of the nets ranged between 12.2 m and 68.0 m. Three of the 30 nets fished for more than one night due to inclement weather creating unsafe work conditions. Lake whitefish, chub, and yellow perch were sought. The position of each net is shown in Figure 18.

Sixteen fish species were caught during this project (Table 10). Four more species were caught this year, even though the number of nets set were identical. Brown trout, white perch (*Morone americana*), white bass, rainbow trout (*Oncorhynchus mykiss*), and Chinook salmon (*O. tshawytscha*) were caught this year but not last year. Rock bass (*Ambloplites rupestris*) were caught last year but not this year. The most common species were yellow perch (75.5 % of the catch), lake whitefish (8.5 %), and white sucker (7.1 %). Plots of the biological attributes of the lake trout (Figure 19), lake whitefish (Figure 20), chub (Figure 21), and yellow perch (Figure 22) captured during this project were constructed.

Average CPUE for this project was 71.8 fish/night. Yellow perch had the highest mean CPUE (104.3), followed by white sucker (16.2), and lake whitefish (11.2). Over 95 % of the chub were caught in the 32 mm mesh.

Table 9. Set information for the fishing gear deployed in the spring in the southern main basin near Grand Bend during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
601	18-Jun-10	43° 36.41'	-81° 53.22'	GL32	18.45	43.9
602	18-Jun-10	43° 35.81'	-81° 53.55'	GL32	17.85	43.0
603	18-Jun-10	43° 35.80'	-81° 51.94'	GL21	17.21	34.5
604	19-Jun-10	43° 37.92'	-81° 56.88'	GL32	23.30	68.0
605	19-Jun-10	43° 37.28'	-81° 57.30'	GL32	22.61	67.5
606	19-Jun-10	43° 37.20'	-81° 55.50'	GL21	21.88	60.5
607	20-Jun-10	43° 32.97'	-81° 52.76'	GL32	21.80	34.5
608	20-Jun-10	43° 32.48'	-81° 53.25'	GL32	21.98	34.8
609	20-Jun-10	43° 32.04'	-81° 51.49'	GL21	22.18	27.6
610	21-Jun-10	43° 24.56'	-81° 55.96'	GL32	21.26	31.8
611	21-Jun-10	43° 24.04'	-81° 56.58'	GL32	21.90	31.9
612	21-Jun-10	43° 23.60'	-81° 54.99'	GL21	22.48	28.1
613	22-Jun-10	43° 21.88'	-82° 02.13'	GL32	23.60	37.3
614	22-Jun-10	43° 21.79'	-82° 01.07'	GL32	22.96	37.3
615	22-Jun-10	43° 22.57'	-82° 01.08'	GL21	22.36	39.1
616	23-Jun-10	43° 18.42'	-81° 57.48'	GL32	22.26	25.2
617	23-Jun-10	43° 18.92'	-81° 56.96'	GL32	21.55	24.6
618	23-Jun-10	43° 18.47'	-81° 56.31'	GL21	20.75	21.6
619	24-Jun-10	43° 34.38'	-81° 47.97'	GL32	18.53	18.8
620	24-Jun-10	43° 33.56'	-81° 47.54'	GL32	19.20	18.5
621	24-Jun-10	43° 33.60'	-81° 48.77'	GL21	19.76	18.7
622	28-Jun-10	43° 33.43'	-81° 44.87'	GL32	44.43	12.3
623	28-Jun-10	43° 32.72'	-81° 44.67'	GL32	44.61	12.2
624	28-Jun-10	43° 32.71'	-81° 45.41'	GL21	44.86	14.0
625	05-Jul-10	43° 19.21'	-81° 51.70'	GL32	20.88	17.3
626	05-Jul-10	43° 18.96'	-81° 52.46'	GL32	21.25	17.6
627	05-Jul-10	43° 20.06'	-81° 52.85'	GL21	20.39	19.2
628	06-Jul-10	43° 17.44'	-81° 50.95'	GL32	22.05	12.5
629	06-Jul-10	43° 17.72'	-81° 50.11'	GL32	21.46	12.6
630	06-Jul-10	43° 18.36'	-81° 52.06'	GL21	22.78	15.8

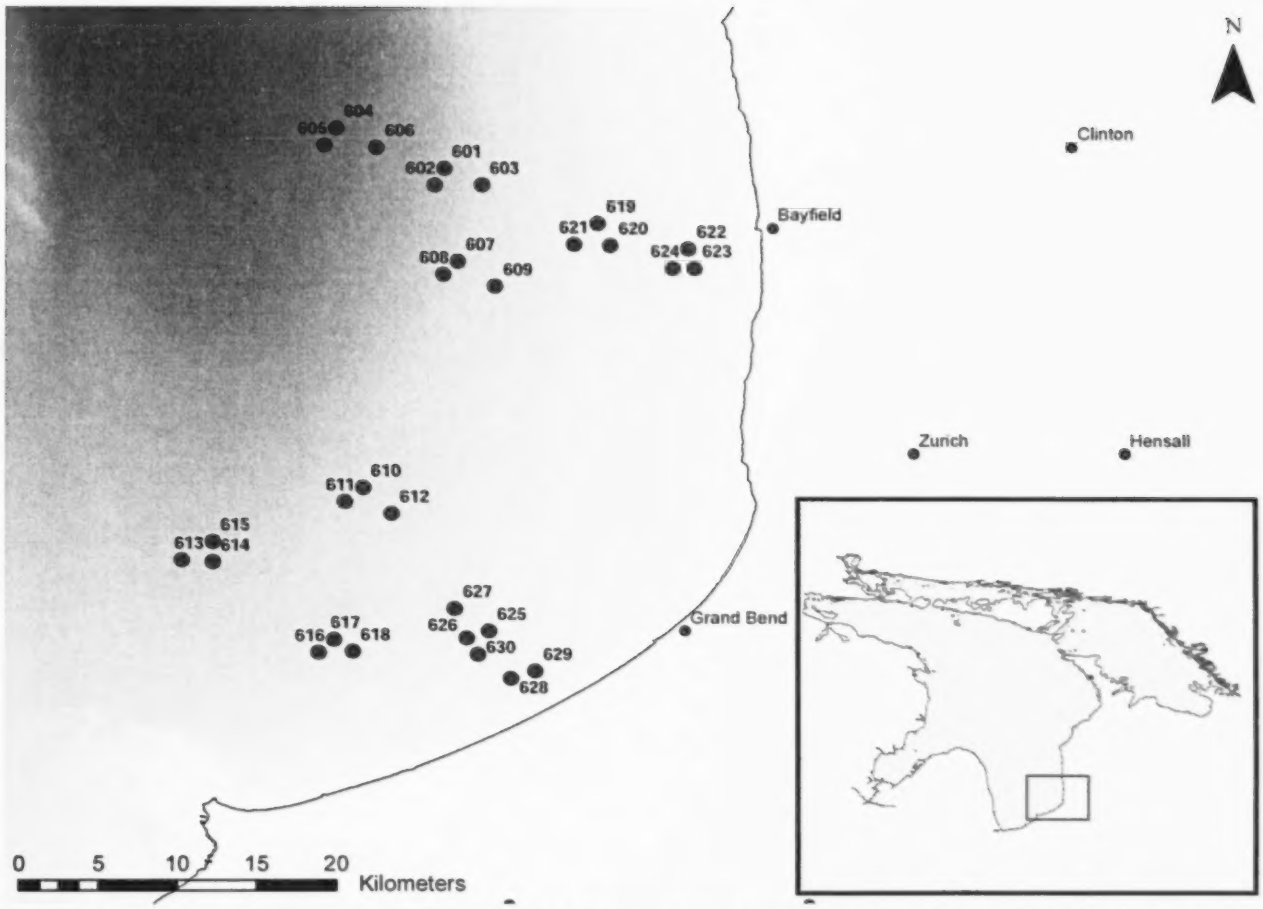

Figure 18. Offshore index sampling locations in the southern main basin near Grand Bend during 2010 (project code LHA_IA10_006) during the spring (June and July). Chub, lake whitefish, and yellow perch were targeted.

Table 10. Count of the number of fish by species caught in each mesh size of the gill nets set in the southern main basin near Grand Bend in the spring during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	**032**	**038**	**051**	**064**	**076**	**089**	**102**	**114**	**127**	**140**	**153**	**Total**	**CPUE**
Brown Trout				1	1	1						3	1.00
Chinook Salmon		1										1	1.00
Chub	117	5	1									123	1.00
Cisco	6	3		1								10	1.67
Coho Salmon				1								1	1.00
Lake Trout				3	2		5	7	4	1		22	1.69
Lake Whitefish	11	13	36	41	33	24	16	10	5	1		190	11.17
Longnose Sucker					5	2	2					9	1.10
Rainbow Smelt	3	1			1							5	1.67
Rainbow Trout					1							1	1.00
Round Goby	3											3	1.25
Walleye				3	3	4	5	5				20	2.13
White Bass			1									1	1.00
White Perch							1					1	1.00
White Sucker	1	6	21	54	37	32	8					159	16.22
Yellow Perch	686	794	164	16	22	6	2					1690	104.32
Total	827	823	223	120	105	69	39	22	9	2	0	2239	

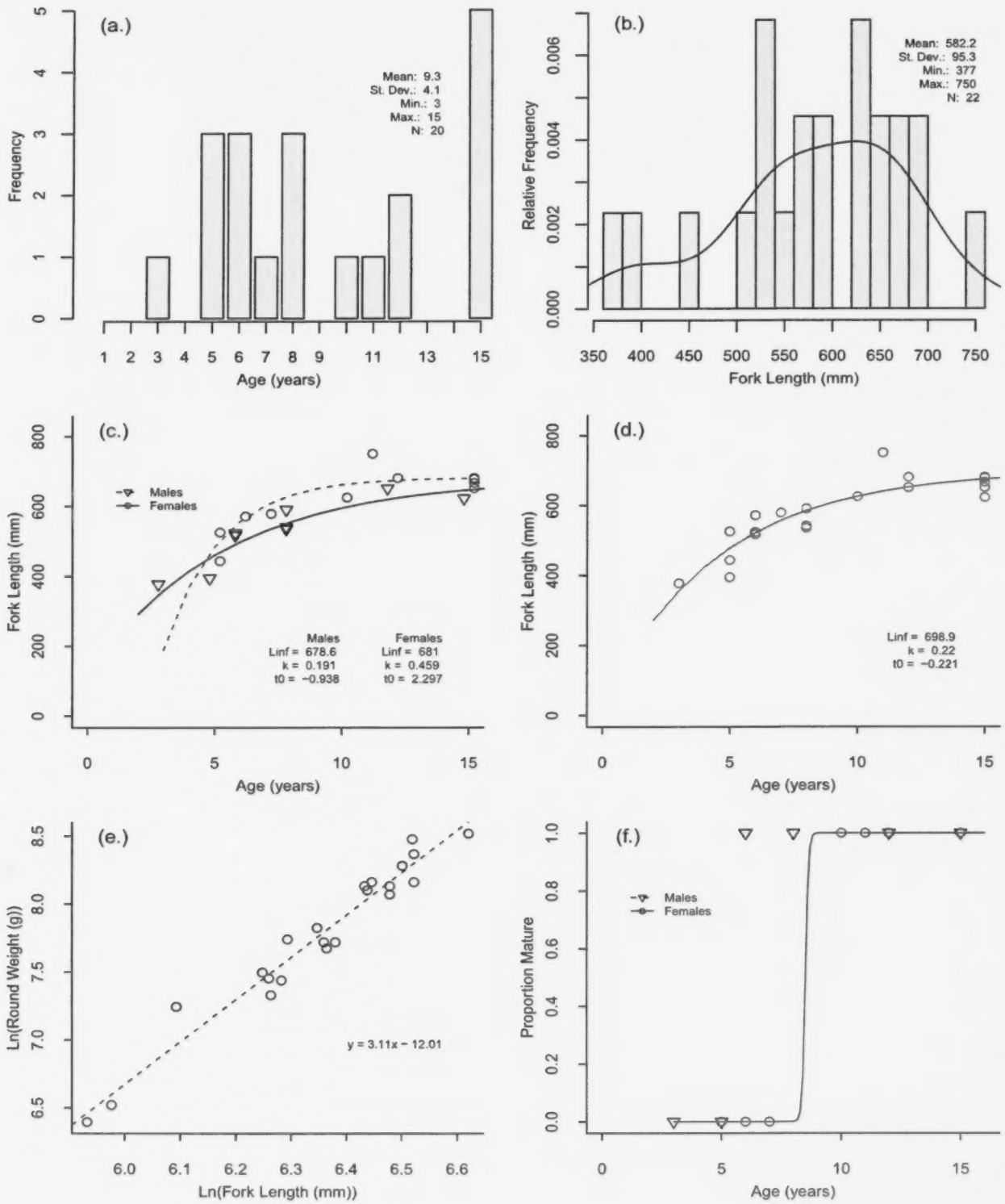

Figure 19. Lake trout age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), June 2010.

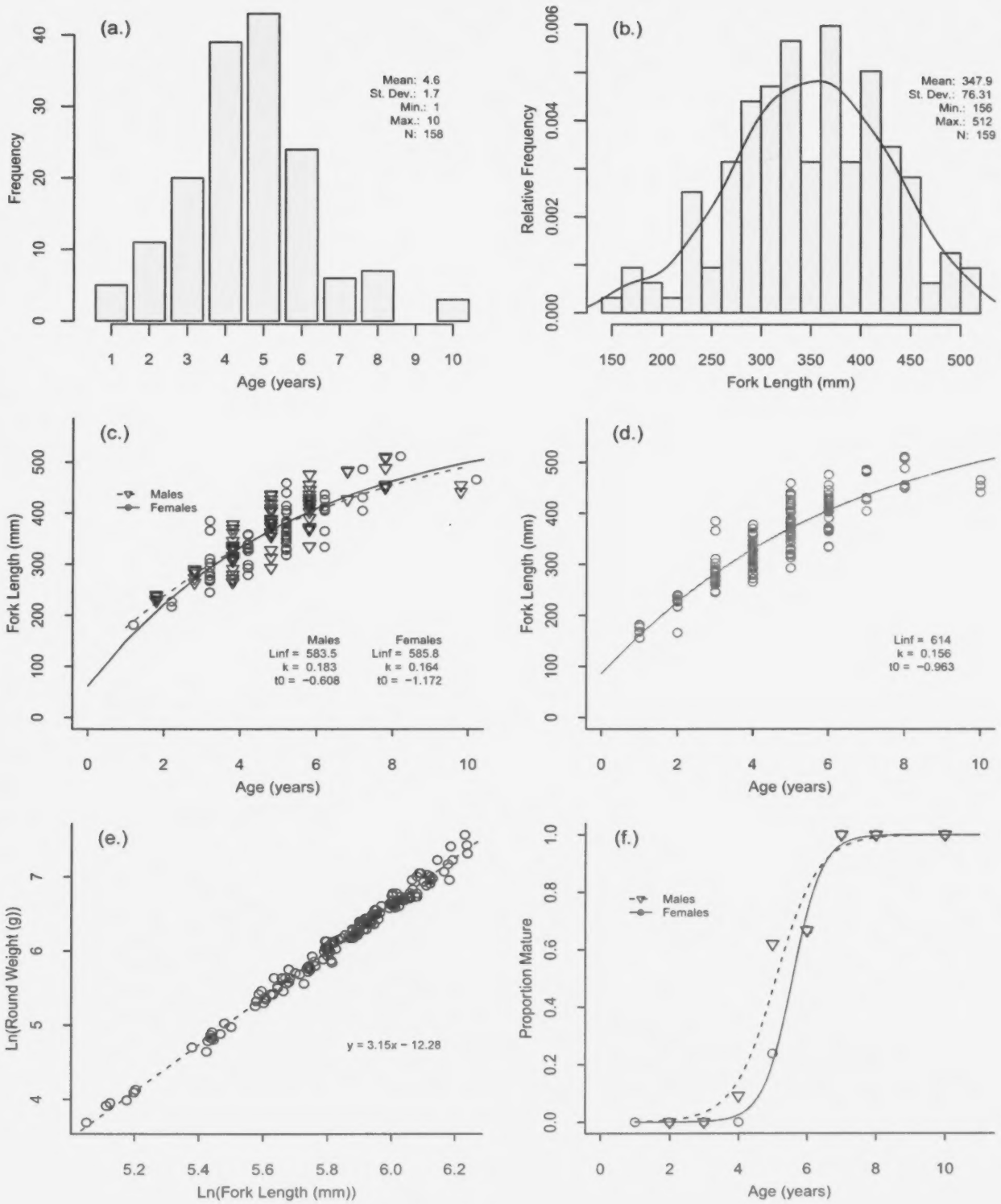

Figure 20. Lake whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), June 2010.

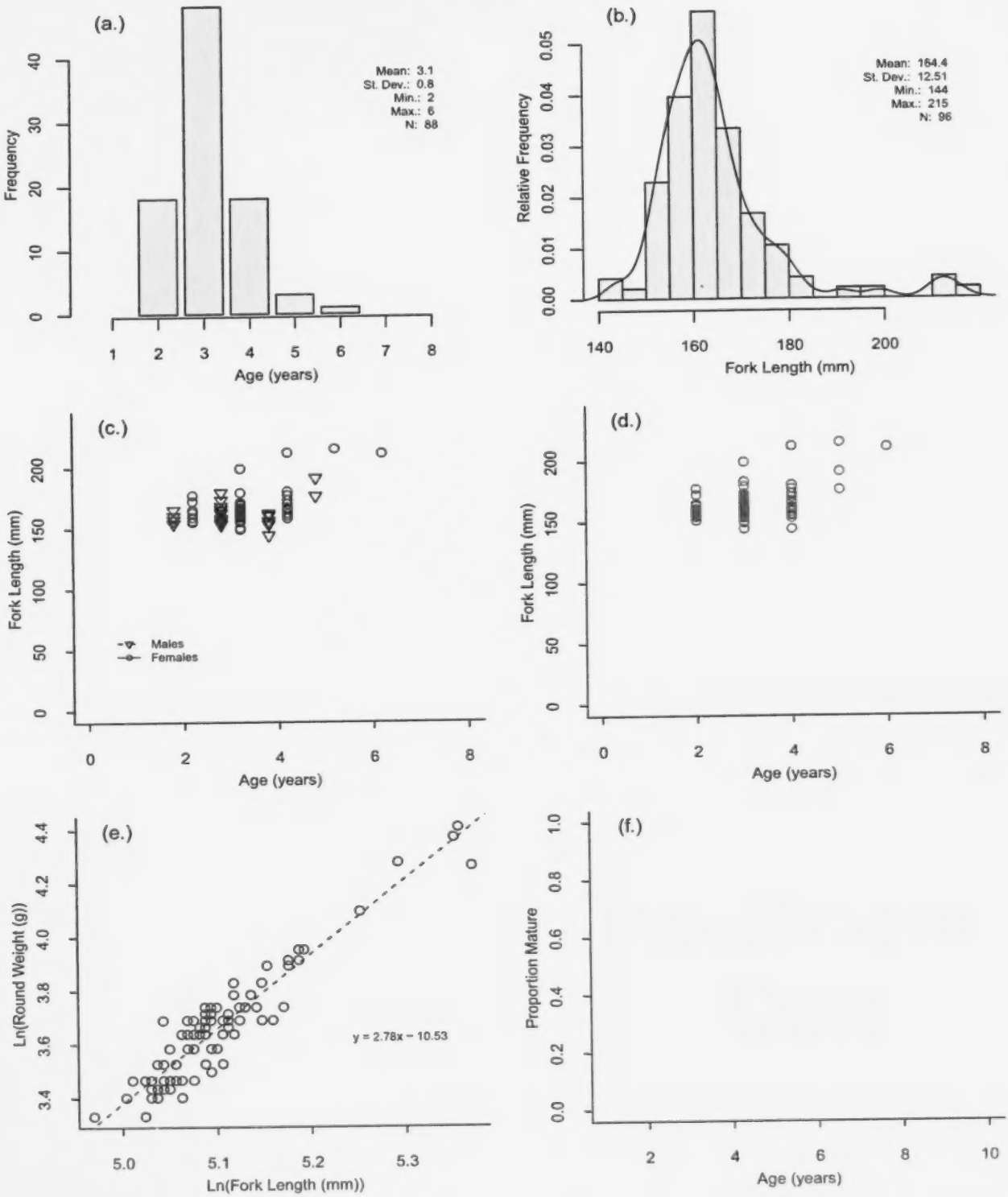

Figure 21. Chub age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), June 2010.

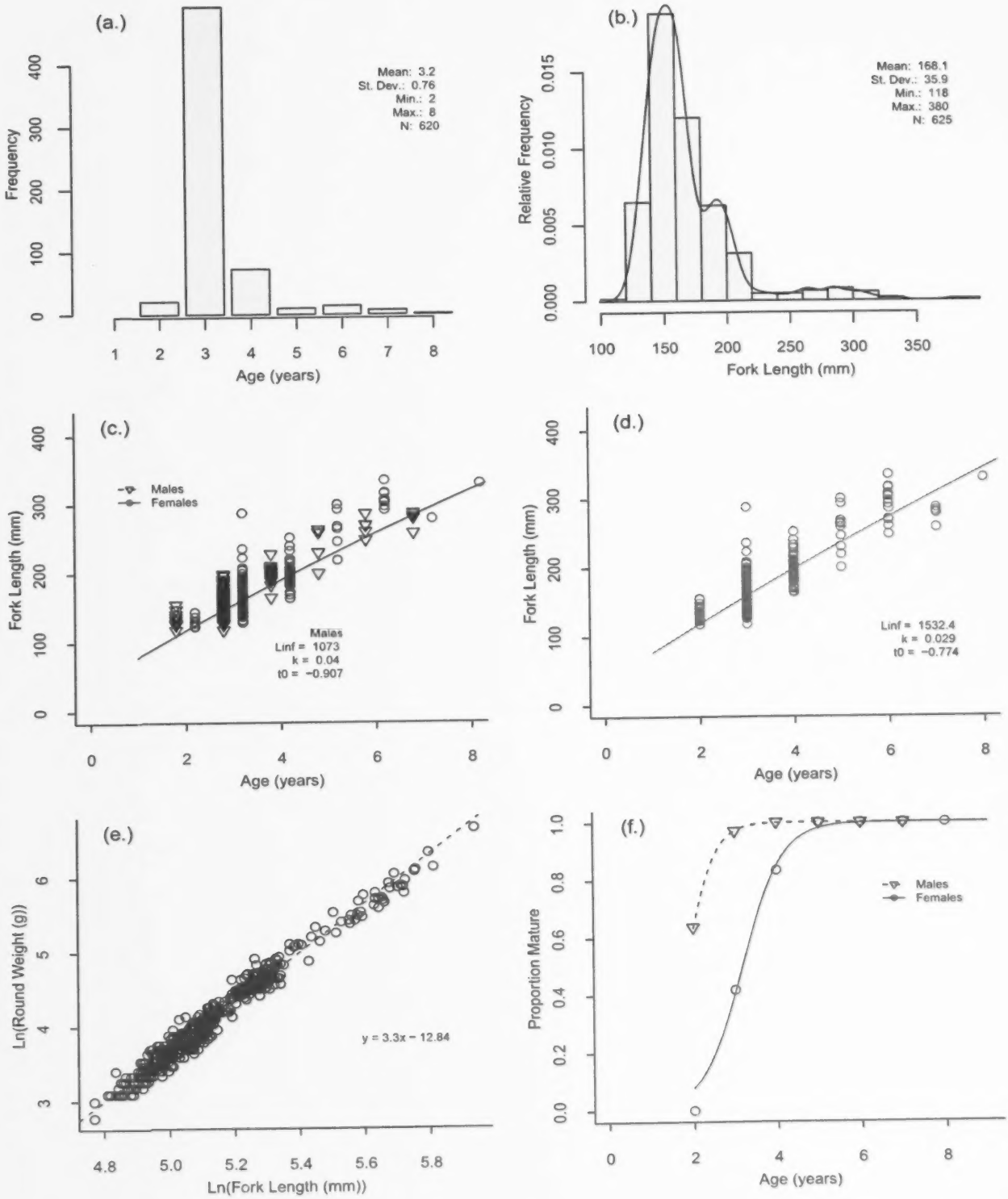

Figure 22. Yellow perch age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), June 2010.

Southern Lake Huron (Grand Bend) - Fall **[LHA_IA10_006]**

This project was conducted in the southern main basin near Grand Bend between September 27 and September 30 (Table 11). The depth of the nets ranged between 18.4 m and 39.3 m. All six net sets were approximately 24 hours in duration. The number of nets set was reduced to six from the typical 15 to 27 due to financial constraints. Lake whitefish and yellow perch were targeted. The position of each net is shown in Figure 23.

Sixteen fish species were caught during this project (Table 12). Three fewer species were caught last year, even though the number of nets set were identical. Burbot, chinook salmon, and redhorse (*Moxostoma sp.*) were caught this year but not last year. The most common species were yellow perch (71.3 % of the catch), white sucker (7.9 %) and longnose sucker (5.4 %). Plots of the biological attributes of the lake whitefish (Figure 24) and yellow perch (Figure 25) captured during this project were constructed.

Average CPUE for this project was 141.2 fish/night. Yellow perch had the highest mean CPUE (167.0), followed by white sucker (16.8), and longnose sucker (15.3). Gizzard shad (*Dorosoma cepedianum*) were caught in every mesh size except the largest (153 mm).

Table 11. Set information for the fishing gear deployed in the fall in the southern main basin near Grand Bend during the 2010 offshore index program.

Sample Number	Set Date	Latitude	Longitude	Gear Code	Effort Duration (hrs)	Average Depth (m)
651	27-Sep-10	43° 38.03'	-81° 52.53'	GL32	18.03	39.3
652	27-Sep-10	43° 37.40'	-81° 52.80'	GL32	17.39	38.9
653	27-Sep-10	43° 37.20'	-81° 51.86'	GL21	16.81	30.8
654	29-Sep-10	43° 33.54'	-81° 47.84'	GL32	23.60	18.4
655	29-Sep-10	43° 34.24'	-81° 47.66'	GL32	23.80	18.6
656	29-Sep-10	43° 34.26'	-81° 49.01'	GL21	24.31	19.9

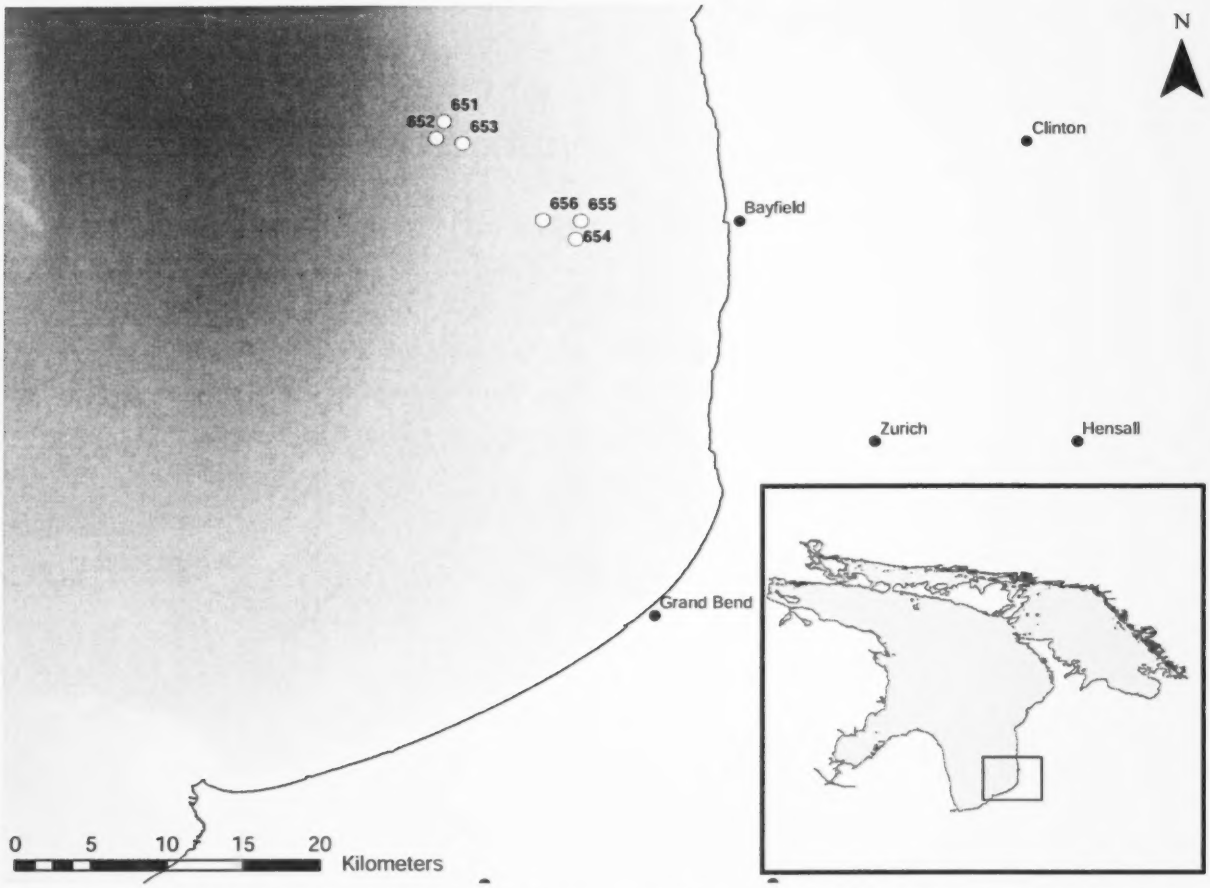

Figure 23. Offshore index sampling locations in the southern main basin near Grand Bend during 2010 (project code LHA_IA10_006) during the fall (September). Lake whitefish and yellow perch were targeted.

Table 12. Count of the number of fish by species caught in each mesh size of the gill nets set in the southern main basin near Grand Bend in the fall during the 2010 offshore index program. Catch per unit effort (CPUE) is the mean number of fish caught per net each night.

	Mesh Size (mm)												
Species	**032**	**038**	**051**	**064**	**076**	**089**	**102**	**114**	**127**	**140**	**153**	**Total**	**CPUE**
Burbot						1						1	1.00
Channel Catfish						1						1	1.00
Chinook Salmon	1		3	2	1							7	7.00
Chub	11											11	3.67
Cisco				1								1	1.00
Gizzard Shad	1	1	2	1	2	3	4	3	5	2		24	6.00
Lake Trout				2	1	1	2	3	2			11	5.50
Lake Whitefish		5	7	4	8	5	1		1	1		32	10.67
Longnose Sucker		6	9	8	13	7	1	1	1			46	15.33
Rainbow Smelt	5	3	1	1	2	1			1			14	3.50
Redhorse Suckers							1					1	1.00
Round Goby	18	1										19	9.50
Walleye							2	1	1	1		5	1.25
White Bass			2									2	1.00
White Sucker		3	11	22	9	10	7	5				67	16.75
Yellow Perch	182	98	172	101	30	21						604	167.00
Unknown	1											1	1.00
Total	219	117	207	142	66	50	18	13	11	4	0	847	

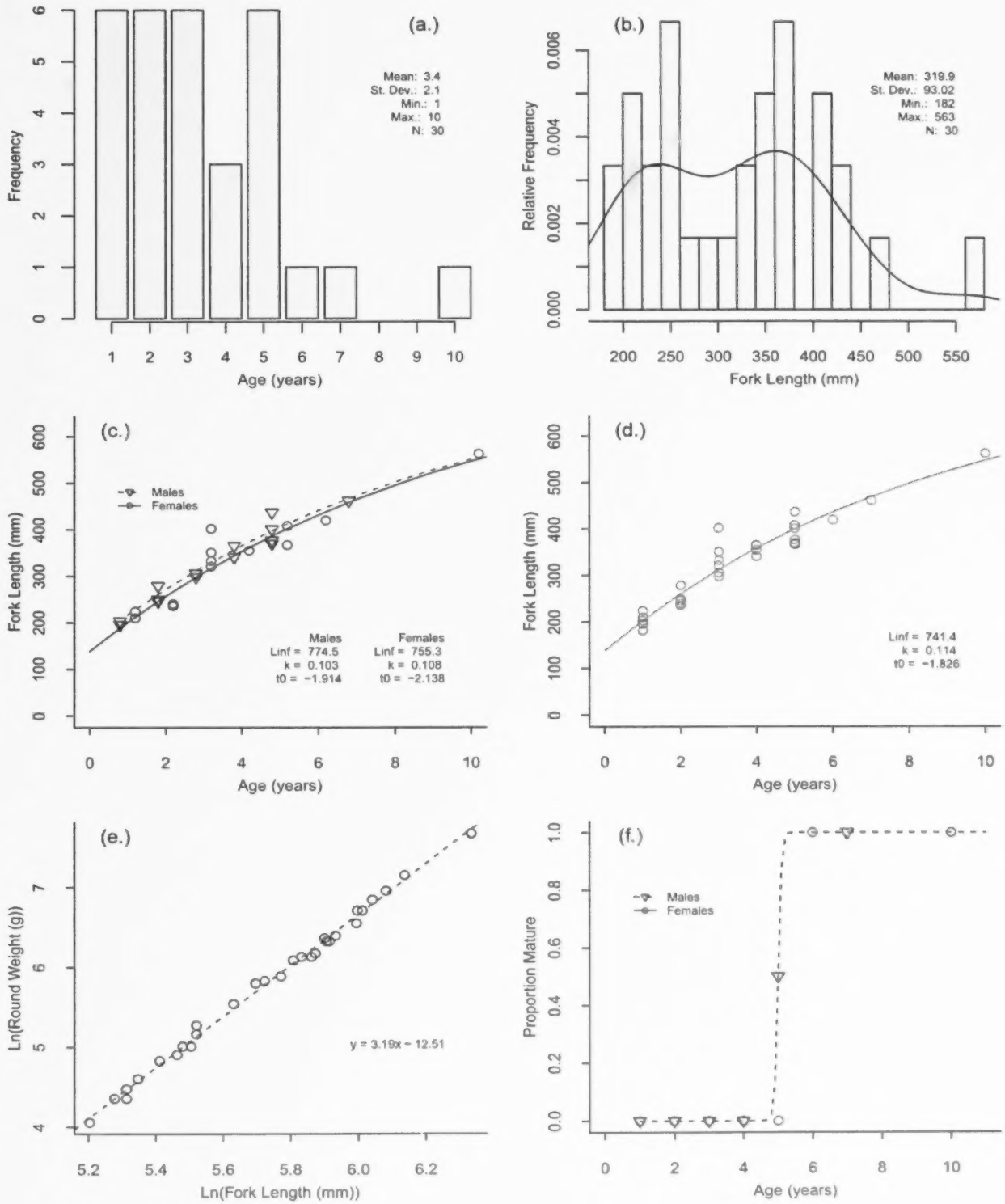

Figure 24. Lake whitefish age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), September 2010.

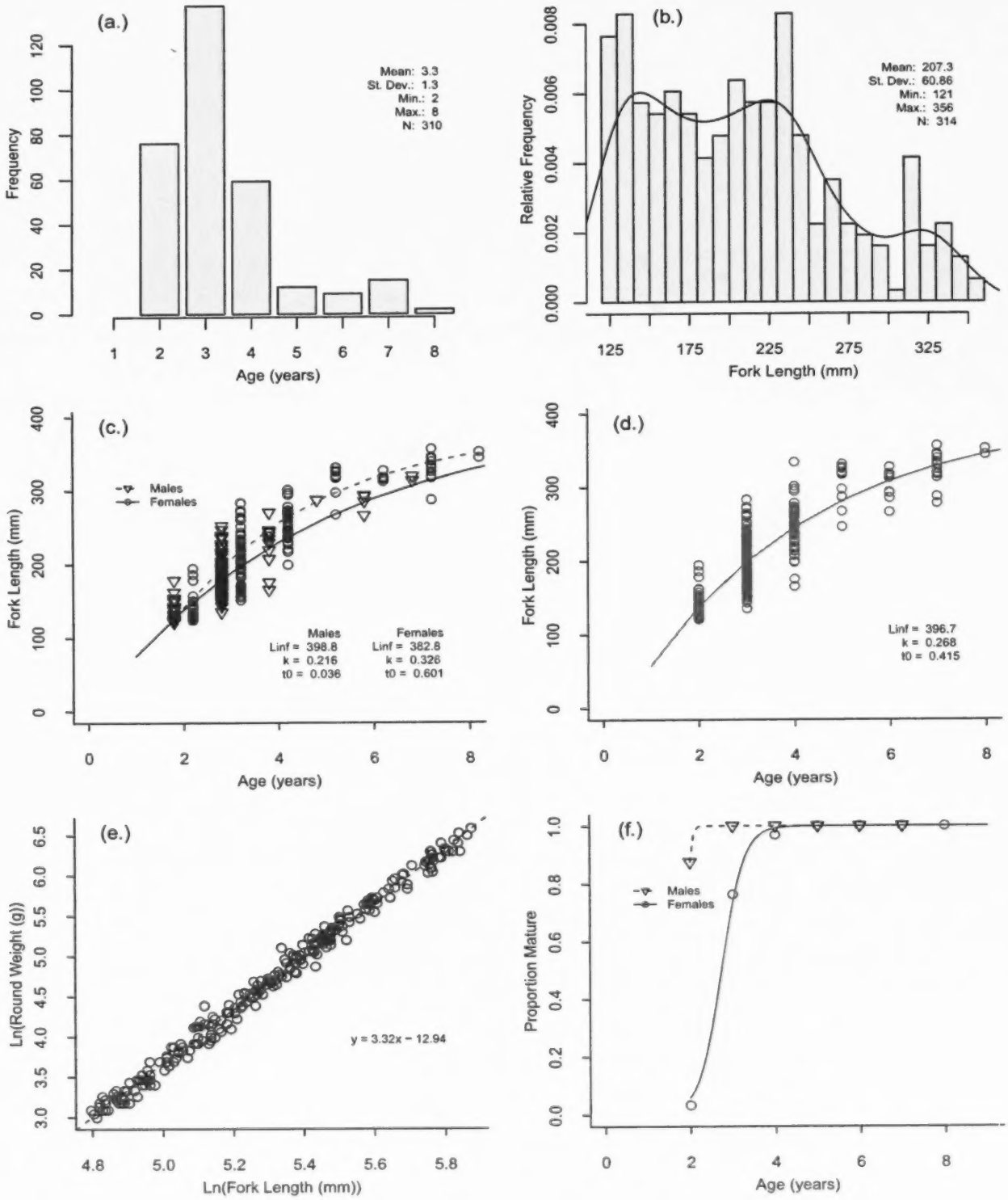

Figure 25. Yellow perch age distribution (a), fork length distribution (b), fork length-at-age (by sex (c) and all fish combined (d)), weight-at length (e), and maturity-at-age (f) from the Grand Bend project (LHA_IA10_006), September 2010.

Pre-Recruit Indices

Lake Whitefish

In general, the strength of the recent year classes of lake whitefish has remained low (Table 13). The last strong year class in the central main basin was the 2003 year class. This year class still persists in very low numbers in the catch. While the 2008 year class shows some improvement, year classes after the 2003 year class have been very weak. In Georgian Bay there has not been a strong year class since the 2001 year class. While this year class is still present in the fishery, the 2004 and 2008 year classes made up a significant portion of the catch in this year's program. This was unexpected given their low pre-recruit values. The year classes in the southern main basin are relatively stronger than the other two regions. However, the strength of the year classes after the 2005 year class are still weaker than the long-term average for this region.

Chub

The strength of the year classes of chub is very different between the central and southern portions of the main basin (Table 13). The central main basin has produced weak year classes of chub every year after the 2000 year class. In contrast, the southern main basin has produced strong year classes from 2003 to 2005. However, very few of the fish from these year classes have been captured in the larger mesh of the index gear. The strength of the 2006 year class in this region is well below the long-term average. Pre-recruit indices for chub in this region have not been calculated after the data collected during the 2008 offshore index program because not enough data have been available in recent years.

Yellow Perch

The strength of the year classes of yellow perch is highly variable throughout Lake Huron (Table 13). In the central main basin there have been three recent, strong year classes; 2006, 2007, and 2009. The opposite trend has occurred in the North Channel, where 2005 was the last strong year class. In the southern main basin the last strong year class was the 2003 year class, which continues to be present in very low numbers. However, the 2007 year class is slightly stronger than the long-term average, an improvement from the weak year classes between 2004 and 2006. The 2008 year class appears to be weak in all regions.

Table 13. Pre-recruit indices for lake whitefish, chub, and yellow perch from select Quota Management Areas (QMAs) in Lake Huron. Indices for each QMA are calculated using data from their respective projects; 4-4 from the central main basin, 4-5 from the southern main basin, 5-8 from southern Georgian Bay, and 6-1 from the North Channel.

		Lake Whitefish			Chub		Yellow Perch		
	QMA	4-4	4-5	5-8	4-4	4-5	4-4	4-5	6-1
Year	Cut Off	1	10	1	1	20	1	20	1
Class	Ages	1-3	1-3	1-3	2-4	2-4	1-3	1-3	1-4
1988									
1989					15.45	23.81			
1990		34.49	16.23	28.93	24.23	13.87	11.21	18.38	10.45
1991		17.48	13.52	12.62	4.95	6.16	73.87	20.84	10.56
1992		12.44	2.49	7.35	0.83	0.98	1.05	0.68	0.52
1993		9.31	13.16	9.50	3.13	3.91	9.68	8.76	6.79
1994		8.72	6.59	1.58	3.37	7.62	1.08	24.88	4.05
1995		7.56	7.69	15.37	5.22	6.37	3.19	19.56	9.01
1996		9.65	5.36	7.61	5.88	4.96	0.14	2.37	6.53
1997		6.61	10.00	1.76	17.33	6.53	0.98	5.00	15.12
1998		24.59	18.13	17.42	36.57	14.35	20.20	45.80	26.94
1999		23.79	9.39	53.40	30.23	11.88	1.57	3.81	7.34
2000		8.32	5.07	20.72	23.82	6.03	2.54	1.23	6.77
2001		7.54	6.92	21.49	7.97	0.00	3.73	2.12	0.38
2002		2.62	4.39	3.32	1.96	5.73	2.62	6.49	8.94
2003		23.60	29.72	0.46	2.26	24.04	7.99	24.11	7.91
2004		4.56	12.87	0.06	2.23	27.39	2.58	3.13	10.05
2005		1.48	12.48	0.59	1.40	21.91	7.88	3.98	36.54
2006		0.00	7.49	0.11	2.01	2.30	11.37	3.28	6.59
2007		0.41	8.11	0.22	2.22		41.51	10.96	0.85
2008		8.45	2.87	1.23	0.00		6.02	2.37	0.00
2009		0.00	8.85	0.47			14.65	0.00	
Mean		10.58	10.07	10.21	9.55	10.44	11.19	10.39	9.23

Discussion

One fewer fish species and less individuals were caught this year compared to last year. This is expected because effort decreased from 208 nets in 2009 to 117 nets in 2010. This reduction is primarily due to logistical constraints related to preparing a new research vessel for use in this program. The number of species captured this year decreased by 1 to 26, a value still within the typical range encountered over the offshore index program's history. CPUE increased from a record low of 26.4 in 2009 to 36.5 in 2010. However, this CPUE is still fairly low and consistent with the low CPUEs observed over the past eight years. The species captured most frequently remained yellow perch, lake whitefish, and white sucker.

Lake Whitefish Trends

In southern Georgian Bay the CPUE of lake whitefish decreased from its slight increase in 2009, continuing the downward trend which began in 2004. Last year the 2003 year class made up a significant portion of the catch in southern Georgian Bay near Cape Rich. While this year class was caught again this year, its frequency was reduced. While the 2008 year class was more numerous in the catch than adjacent year classes, only 10 fish from this year class were captured. This is a relatively poor catch which agrees with the pre-recruit index in that this year class appears to be weaker than average.

The CPUE of lake whitefish in the central main basin has steadily declined over the past 10 years. In 2008 CPUE during the fall dropped to its lowest level in more than 20 years. In 2009 and again in 2010 CPUE did increase, but it remains below the long-term average. CPUE in the spring remains well below the long-term average. The catch in this region was largely dominated by fish older than five. The very abundant 2008 year class observed in 2009 has all but vanished.

The CPUE of lake whitefish in the southern main basin has remained stable since 2005. The 2005 and 2006 year classes have made up most of the catch in recent years and 2010 was no different. Unlike the central main basin, younger fish were present and older fish were much less prominent in this location.

Chub Trends

Chub in southern Georgian Bay and the central main basin continue to be present in very low numbers. The CPUE of chub in southern Georgian Bay decreased again this year. In the central main basin chub CPUE remained low as well. The CPUE of chub around the Watcher Islands was

relatively high compared to the areas around Southampton and Cape Rich. In the central main basin the catch was dominated by the 2006 and 2007 year classes while around the Watcher Islands the catch was dominated by the 2004, 2005, and 2006 year classes. However, all year classes remain very weak.

In the southern main basin the CPUE of chub is typically higher in the fall than in the spring. This year the opposite was true; CPUE in the fall declined to below that of the spring, which didn't deviate much from the long-term average. The 2007 year class dominated the catch, a change from 2009 where all year classes after 2001 were common. The mean age of chub in this location fell from the unusually high 5.0 last year to a more typical 3.1 this year.

Yellow Perch Trends

The CPUE of yellow perch in the central main basin remains unstable and highly variable over the last 15 years. This year the CPUE of perch was consistent with the long-term average in the spring but relatively high in the fall. The strong 2008 and 2009 year classes comprised much of the catch while the once-strong 2007 year class was much less common than it was in 2009.

In the southern main basin the CPUE of yellow perch was comparable to those observed over the last nine years. CPUE in the spring was consistent with the long-term average while CPUE in the fall was higher. The 2007 year class dominated the catch, although the 2008 year class had a stronger presence in the fall. The higher frequency of the 2007 year class in the catch agrees with the pre-recruit analysis, which indicates that all other year classes after the 2003 year class are much weaker than the 2007 year class.

Lake Trout Trends

The CPUE of lake trout has remained relatively stable in the main basin. In the southern main basin CPUE tends to be a little higher in the fall than in the spring. The mean age of lake trout sampled in the central main basin has steadily increased from 4.5 in 2003 to 7.2 in 2010 and in the southern main basin from 4.7 in 2003 to 8.7 in 2010. The broad age distribution of lake trout with many mature year classes is encouraging from a lake trout rehabilitation perspective.

Unlike the stable CPUE observed in the main basin, the CPUE of lake trout in southern Georgian Bay has been increasing since 2007. However, CPUE still remains well below those values observed prior to 2004. There was a slight decline in CPUE in 2010. CPUE increased from 2.6 in 2008 to 5.3 in 2009 and is now down to 3.3. CPUE from the project around the Watcher Islands

was lower still at 2.4. The 2003 and 2005 year classes were the most abundant in the catch off of Cape Rich. The 2006 and 2007 year classes were the most abundant around the Watcher Islands.

Over 50 unclipped lake trout were observed during the offshore index program this year, most of which were from the projects near Southampton and Cape Rich. Strangely, very few unclipped lake trout were observed near the Watcher Islands. Unclipped lake trout in the central main basin rose to 53.5 % of the 43 lake trout which were examined for clipped fins. The percentage of unclipped lake trout in this location has been increasing steadily since the early 1990s and has doubled between 2009 and 2010. A near record-high percentage of unclipped lake trout were also captured off of Cape Rich in southern Georgian Bay (32.8 % of 64). This is second-highest value ever observed in this region. Conversely, unclipped lake trout composed only 3.9 % of the 51 lake trout captured near the Watcher Islands that were checked for fin clips (similar to the 6.8 % of 44 checked last year). In the southern main basin the percentage of unclipped trout has been increasing rapidly since 2006; presumably wild fish comprised 47.6 % of the 42 lake trout checked for fin clips in 2009. In 2010 this value fell sharply to 27.3 % of 33.

Summary

Most of the projects planned for the 2010 offshore index program were completed successfully. Unfortunately, the projects which were planned around Clapperton Island, Collingwood, and Heywood Island were not run due to logistical constraints related to preparing a new research vessel for use in this program. Slime has not impeded the effectiveness of any of the fishing gear since 2008; 2010 was no different.

In general, the number of species observed from the 2010 offshore index program was similar to the long-term average for the program. While the number of species captured in many locations increased, nearly all of them are captured regularly in other locations. Salmonids (brown trout, Chinook salmon, and rainbow trout) were caught in more locations this year compared to last year. Sixteen species were caught off of Southampton in the central main basin during the fall, up from 13 in 2009. This is noteworthy because effort decreased in this project in 2010; 27 nets were set in 2009 while 12 were set in 2010. This increase was also evident in the southern main basin. In the spring 12 species were caught in 2009 while 16 species were caught in 2010. In the fall the number of species captured rose from 14 to 16. The same number of nets were set in both cases in each season.

The strength of the year classes of lake whitefish, chub, and yellow perch varies by location. The 2005 year class of lake whitefish remains strong in the southern main basin. The pre-recruit indices

also indicate that the 2009 year class is only slightly weaker than average. The pre-recruit index forecasts a moderately strong 2008 year class of lake whitefish in the central main basin. The previous four year classes in this region have all been weak, as is the 2009 year class. The last strong year class of lake whitefish in southern Georgian Bay was the 2001 year class. Chub from the southern main basin are largely members of the 2007 year class. The latest pre-recruit estimates in both the southern and central main basins forecast weak year classes for chub. In the central main basin a strong year class has not occurred since 2000. The 2007 year class of yellow perch is still very strong in the southern main basin. This year class is less dominant in the central main basin, where the 2008 and 2009 year classes tend to dominate the catch.

The percentage of unclipped (and potentially wild) lake trout in the catch continues to rise, especially in the central main basin (53.5 % of 43). While a high percentage (32.8 % of 64) of unclipped lake trout was seen again in southern Georgian Bay this year, overall abundance continues to be lower than in the past. Of the 33 lake trout that were sampled from the southern main basin, 27.3 % were unclipped. Last year 47.6 % of the 42 lake trout captured in this area that were examined for fin clips were unclipped.

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